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**A critical examination of published sport motivation research:
1975-1986**

Warren, Linda Louise, Ed.D.

The University of North Carolina at Greensboro, 1987

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A CRITICAL EXAMINATION OF PUBLISHED SPORT
MOTIVATION RESEARCH: 1975 - 1986


by

Linda L. Warren

A Dissertation Submitted to
the Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

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APPROVAL PAGE

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The present secondary research review was undertaken with four primary purposes: (a) to determine the "state of the art" of sport motivation research; (b) to consolidate and synthesize the available information regarding sport motivation; (c) to identify strengths and weaknesses in the empirical support for practices in sport motivation; and (d) to propose future directions for research and practices in sport motivation.

A total of 60 reports published in professional periodicals between 1975 and 1986 were included in the study. Data were collected on the theoretical influences, variables, research strategies, subjects and principal investigators of each study.

The following observations were offered: (a) The most popular psychological theories were Csikszentmihalyi's Flow, Deci's Intrinsic Motivation, McClelland's Achievement Motivation, Maslow's Hierarchy of Needs, Weiner's Attribution Theory and White's Competence Motivation. Two researchers attempted to generate sport motivation theories and models. There was no clear pattern observed for setting forth the theoretical bases of sport motivation research. (b) Twenty-one psychological constructs and related effects and 32 performance variables were identified in the studies.

(c) Thirty-one studies were classified as descriptive. Other strategies identified were correlational, instrument development/validation, experimental, quasi-experimental and ex post facto. (d) The subjects studied represented levels of participation ranging from youth sports to professional and Olympic athletes. Approximately 61% of the subjects were male and 37% female. (e) Fifty-four principal investigators were responsible for the 60 articles reviewed. Eleven of the principal investigators were female. Fifty-three of the principal investigators were affiliated with colleges or universities. Twenty-seven were associated with physical education or a related area. A total of 111 researchers were involved in the publication of the 60 articles. (f) Four trends were identified. Participants in athletics tend to have a high need to achieve and a more internal locus of control. Extrinsic rewards tend to lessen intrinsic motivation. Enjoyment appears to be a primary motivating factor. (g) Each article reviewed could itself be the focal point of a series of studies.

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CHAPTER I

INTRODUCTION

Motivation is a concern to everyone involved in sports. Spectators, coaches, players and sport psychologists continually seek explanations for variations in individual athletic performance beyond those pertaining to physiological functioning and physical conditioning. The growing concern for the psychological state of the athlete has led to considerable research and speculation about motivation and the many interrelated factors which affect motivation. As Singer (1977) indicated, motivation is responsible for the:

- (a) selection of and preference for some activity
- (b) persistence at the activity (duration of training)
- (c) intensity and vigor of performance (effort)
- (d) adequacy of performance relative to standards (p.2).

There are several books which either deal wholly with motivation or devote at least a chapter to motivation in the sport environment. Many of these publications are general in nature, briefly reviewing some of the psychological and sport psychology research, reporting specific motivational techniques utilized by successful coaches, and, occasionally, citing specific case studies to illustrate problems and solutions (Cratty, 1983; Cratty &

Hamin, 1980; Fuoss and Troppman, 1981; Iso-Ahola & Hatfield, 1986; Jones et al, 1982; Klavara & Daniel, 1979). Some of the writings cite a specific psychological theory or theories upon which the text elaborates and is then applied to the sport environment (Cox, 1985; Straub, 1978; Suinn, 1980). Others rely upon a less research oriented base, reporting effective outcomes of sport participation as motivational factors, as well as certain specific techniques coaches have felt to be successful motivational tools (Neal and Tutko, 1975). Still other authors attempt to bridge the gap between research and application by briefly elaborating upon a chosen theoretical and research base and outlining specific guidelines, suggestions and programs for the reader to implement (Williams, 1986).

The common objective of improved athletic performance is the primary factor linking the theorist, researcher, and the coach. Coaches have traditionally been aware of and received training concerning the fitness, skill, and physical endowment dimensions which affect performance. The literature which is now available includes more information on the fourth dimension, the psychological or behavioral dimension, as referred to by Alderman (1974). However, while the books currently on the market provide the reader with valuable information, we need to reconsider the original research to determine more about the comprehensiveness and validity of our knowledge about sport

motivation. As Donnelly and Birrell (n.d.) pointed out, motivation in sport is multifaceted. Consequently, there are no simple explanations, and there is no magical formula for achieving optimum motivation. The dominant problem in understanding motivation lies in the diversity with which we are faced when examining the concept. Not only are we examining a broad spectrum of activities and subjects used by researchers from diverse backgrounds, we are also faced with a construct which is operationally defined according to the guidelines of one or another specific research project. As Cofer and Appley (1964) suggested, the use of the same concept name does not guarantee the same meaning. Consequently, we find motivation research concerned with attitudes, performance levels, intrinsic versus extrinsic motivation, goal-setting, model-building, attribution theory, need for achievement, personality, and flow (Bird, 1981; Birrell, 1977; Bostain & Gardner, 1981; Butt, 1979; Fodero, 1980; Fulton, 1983; Lefebvre, 1979; Progen, 1978; Reeves, 1983; Singer & Gerson, 1980; Snyder and Spreitzer, 1979).

While researchers have utilized varied operational definitions, subjects, activities and research designs, the common goal has been to gain more insight into the athletes' striving behaviors. Unfortunately, there has been no single theoretical base from which researchers could develop their independent investigations. Also, although each

investigator traditionally reviewed the literature, there was no concerted effort to consolidate the information derived from previous research. Until the data from the many individual investigations are organized and integrated, it is impossible to extract the knowledge about sport motivation desired by the practitioner. Glass (1976) suggested that "... our problem is to find the knowledge in the information" (Glass, p.4). The integrative review was conceived by the writer to be one approach that could be utilized to focus on what is known from the myriad of individual projects. In order to synthesize the existing knowledge base, to identify areas that need further research, and to highlight the empirical findings which verify current practices in sport motivation, this study was undertaken.

Statement of the Problem

This project demonstrates a form of secondary research analysis that utilizes published research reports as a data base. The purpose of the study was to critically examine current sport motivation research with the intent of systematically describing various explanations of motivation as it relates to the competitive sport context. Further, the study identified and evaluated the more specific theoretical basis constructs, research frameworks, and other ideas about motivation that are discussed in the original

reports. Finally, the study examined the status of research-generated knowledge as a basis for further study and attempted to relate research findings to current practices and beliefs.

Specific questions answered by the review were:

1. What psychological theories have been used to provide a foundation for sport motivation research?
 - a. How have they been interpreted and applied?
 - b. Has the individual researcher in sport motivation utilized one, or drawn from more than one, psychological theory to provide a theoretical base for sport motivation research?
 - c. To what extent have published studies in sport motivation been atheoretical?
 - d. To what extent has published research been involved in the generation of a theoretical base for sport motivation?
 2. What specific variables have been studied in the published sport motivation research?
 - a. What psychological constructs have been investigated?
 - b. What performance variables have been considered?
 - c. Have performance variables been considered as dependent or independent variables?
 3. What research strategies have been utilized in the study of sport motivation?
-

- a. What have been the predominant research designs?
- b. What types of instrumentation have been utilized?
- c. Which statistical analyses have been employed?
4. How can the subjects participating in sport motivation research be characterized?
 - a. What types of samples have been utilized?
 - b. What have been the ages of the subjects studied?
 - c. What has been the sex of the subjects?
 - d. What has been the level of participation of the subjects?
5. How can sport motivation researchers be characterized?
 - a. What are the genders of the researchers?
 - b. With what field of study are they associated?
 - c. To what extent have they participated in cooperative research efforts?
6. To what extent is the research in sport motivation providing information which is applicable in the field?
7. To what extent does the published research offer directions for the future study of sport motivation?
8. Is there anything "unique" about the construct of sport motivation compared to explanations in "general" psychology that is revealed by the answers to the preceding questions?

Scope of the Study

This investigation was conducted within boundaries

established by publication date, the nature of the article, and specific journal. With respect to time, only articles published between 1975 and 1986 were examined. Concerning context, primary research reports on sports motivation and reviews of motivation research and theories from the psychological literature referenced by sport motivation researchers were included in the present study. The specific journals from which published articles were examined included the International Journal of Sports Psychology, the Journal of Applied Social Psychology, the Journal of Clinical Psychology, the Journal of Psychology, the Journal of Social Psychology, the Journal of Sports Behavior, the Journal of Sports Psychology, Medicine and Science in Sports, Perceptual and Motor Skills, Psychology, Psychological Reports, and the Research Quarterly for Exercise and Sport.

Assumptions Underlying the Study

One major research assumption was acknowledged to be fundamental to the present investigation. Obviously, the expertise of the principal investigator was crucial to the selection, interpretations, and integration of data which constituted the review.

Definition of Terms

The following definitions were utilized by the author

during the collection and consolidation of data.

Descriptive Research. A systematic report of the observable characteristics exhibited when a specific construct is in operation.

Experimental Research. An investigation which provides for the control and/or manipulation of relevant variables in a possible cause and effect relationship.

Motivation. The construct utilized to describe that which stimulates a person to pursue a specific course of action.

Quasi-Experimental Research. An investigation in which all relevant variables in a possible cause and effect relationship cannot be manipulated and/or controlled.

Research Design. The plan, structure, and strategy utilized by an investigator to control variance and obtain answers to specific research questions (Kerlinger, 1973).

Secondary Research. Research in which the data are derived from previously completed research projects.

Sport Motivation. The construct which describes that which compels a person to engage in a particular sport activity at a specific level of intensity and for a given period of time.

Sport Psychology. A sub-discipline of physical education and psychology concerned with the relationship between the psyche and behaviors in sport.

Significance of the Study

The four goals of this review were: (a) to consolidate and synthesize the available information regarding sport motivation; (b) to identify strengths and weaknesses in the empirical support for practices in sport motivation; (c) to determine the state of the art in sport motivation research; and (d) to propose future directions for theory development and practice. Attainment of any one and/or all of the above has the potential to make a rich contribution to the growing sub-discipline popularly referred to as sport psychology. The review is considered to be the only known effort to accomplish all four of the above purposes within a single comprehensive report.

Organization of the Report

This report is presented as clearly and concisely as possible with the hope that an increased understanding of sport motivation will be enhanced by the consolidation and synthesis of research results. The report begins by providing the reader with a description of the methodology utilized. Chapter III is devoted to outlining and explaining selected influential psychological theories and

constructs. Chapter IV describes the independent and dependent variables utilized by sport motivation researchers. The types of research designs, instrumentation and statistical techniques utilized are presented in Chapter V. Chapter VI provides a brief description of the subjects, and Chapter VII briefly outlines the available information on the researchers. The discussion in Chapter VIII illuminates the writer's observations that extend beyond the specific concerns established by the framing questions. Chapter IX offers the traditional summary and conclusions.

CHAPTER II

METHODOLOGY

Before identifying the specific steps taken in carrying out the present study, the major influences that directed the writer's concern for sport motivation to the undertaking of a comprehensive literature review are discussed. Then, the "evolution" of the study is described. Thereafter, a brief explanation of selected literature germane to the review process is offered. Finally, the methodology and rationale for this study are presented.

The Traditional Literature Review

One of the earliest "training experiences" for the would-be researcher is the introductory graduate course in methods of research. In addition to being informed about general strategies in planning and conducting scholarly investigations, the beginning researcher often commits to memory a series of steps referred to as "the scientific method." For the writer, the review of literature, one of the first steps to be carried out in executing scholarly investigations, warranted sufficient importance in her coursework to be the topic of class assignments. In preparation for completing such assignments, the reasons for reviewing the literature were discussed.

Reviewing related materials purportedly allows the investigator to accomplish the following:

1. Ascertain the current status of knowledge about the problem under investigation.
2. Identify ideas, theories, explanations, hypothesis, etc. that help specify the problem.
3. Suggest research methods (data collection and analytic) that might be adapted for use in a proposed study.
4. Locate comparative data that will enhance the interpretation of findings.
5. Provide opportunities for readers to amplify and/or verify portions of the final report.
6. Contribute to the general scholarship of the investigator (Berlin, 1982).

The purposes of the "traditional" literature review identified above were all supported by physical education textbooks about research. One of the earlier books about research used extensively in the 1970's devoted an entire chapter to the literature review. Clarke and Clarke (1970) identified specific library resources and also explained how the researcher should pursue her/his reading. The research methods text of the major physical education professional organization, the American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD), addressed the planning of library research, developing a bibliography, reviewing reports, and collating them (Hubbard, 1973).

Automated retrieval methods were also described.

The importance of the literature review as a part of the research process has received considerable attention in recent publications. Kroll (1982) placed his comments in the chapter in which he addressed writing the research report. He elaborated the obligation to review the literature as a function of carrying out the scientific method. Kroll also described a strategy for writing the review and the criteria for developing a satisfactory text. Thomas and Nelson (1985) who provided physical educators with the newest research methods textbook, devoted an entire chapter to reviewing the literature. Their discussion incorporated the above remarks by Clarke and Clarke (1970), Kroll (1982), and Hubbard(1973). Interestingly, Thomas and Nelson appeared to relate the entire process of engaging in a literature review to the formulation of the problem to be researched.

In their extensive text about the literature review, McMillan and Schumacher (1984) provided the beginning researcher with considerable information about functions, sources, and procedures for reviewing literature. Their closing discussion about standards for evaluating the adequacy of the literature was helpful in conducting the present review. The majority of education and physical education textbooks fall short of assisting with the synthesis and integration of a specified body of literature;

rather, they focus on the task of characterizing the status of knowledge of a given topic.

Secondary Research. More than a dozen years ago, Glass (1976) in one of his earliest writings about meta-analysis discussed the "... need for more scholarly effort concentrated on the problem of finding the knowledge that lies untapped in completed research studies ..." (p.4). Although Glass' ultimate concern became the statistical re-analysis of a collection of research results, the rationale for his technique, that is, need, and the primary purpose of his efforts, are consistent with the rationale for undertaking the present project.

Burstein's (1978) ideas about secondary analysis provided strong support to the writer's desire to undertake a systematic review of original research. Burstein argued that "... different social sciences use different screens and filters to examine behavior. It is highly unlikely that an original investigator can incorporate all potential relevant views" (1978, p.10). The argument seemed particularly appropriate to research about sport motivation in as much as two distinctly different fields of study are combined in the topic. Moreover, Burstein's (1978) assertion that secondary research may offer "... substantive and methodological anchors ..." (p. 10) has strong implications for on-going research efforts.

The notion of using prior research as the basis for inquiry was underscored for the writer by Hightower (1981). Her extensive consideration of secondary research led to the development of the characterizations presented in Figure 1.

Hightower cited Cook (1974) as the major proponent for secondary evaluation and critiques. She credited Light and Smith (1971) and Glass (1976) with the statistical integration of multiple data sets. Her schematic presentation reveals an overview of the status of secondary research at the start of the 1980 decade.

Figure 1

After-the-fact Secondary Research*

	Single Data Set	Multiple Data Sets
With Data	Secondary Analysis	Cluster Analysis
Re-Analysis	Secondary Evaluation	Meta Analysis
Without Data	Critique/Review	Traditional Literature
Re-Analysis		Case Study
		Box Score/Voting

*Hightower, 1981

Comprehensive/Interpretive Review. Researchers have long utilized the results of previous studies to provide the basis and/or background for additional inquiries. Cooper (1984) suggested that progress in social science research occurs when scholars build upon the efforts of others. Although most research projects have intrinsic value, their importance is enhanced when seen from a broader perspective. We need to be aware of how relatively isolated research projects fit together and expand on previous works. According to Cooper (1984), a comprehensive review may actually be a combination of three types of reviews: (a) methodological, (b) theoretical, and (c) integrative. The methodological review concentrates on research methods and operational definitions utilized in the investigation of a specified topic. The theoretical review allows the reviewer to present theories deemed plausible for the explanation of the phenomenon. The integrative review allows the reviewer the opportunity to investigate past research and draw overall conclusions. The reviewer attempts

... to present the state of knowledge concerning the relation(s) of interest and to highlight important issues, ... and to direct future research so that it yields a maximum amount of new information (Cooper, 1984, p.11).

Jackson (1980) also viewed the research review as a valuable tool in the quest for understanding and knowledge. As proposed by Jackson, the focuses and purposes of the review may include: (a) sizing up new substantive and/or

methodological developments, (b) verifying existing theories or developing new ones, (c) synthesizing knowledge from different lines or fields of research, and (d) inferring generalizations about substantive issues from a set of studies directly bearing on those issues.

Ladas (1980) preferred to utilize the term "summary" in his discourse on reviews and the need for better techniques of synthesis and increased utility of educational research. The four specific purposes in summarizing research offered by Ladas were: (a) to point out flaws and recommend methodological improvements; (b) to establish the academic rigor of the researcher and the field; (c) to influence policy; and (d) to provide conclusions for applied use (pp.597, 598). Thus, the need to consider the consumer is underscored by targeting researchers, scholars, policy makers and practitioners as the audiences for each respective purpose. The comprehensive review as conceptualized in the present study is regarded by the writer as one form of evaluative research which integrates some of the purposes of a review espoused by Jackson (1980) and Ladas (1980) into the integrative and theoretical reviews described by Cooper (1984). Specifically of interest in this review are the possibilities envisioned in a project which attempts to verify or develop new theories, synthesize knowledge from different fields of research, i.e., psychology and physical education, infer

generalizations, and provide conclusions for applied use. It is with this understanding of the potential scholarly contribution of the comprehensive/interpretive review that the present study was undertaken.

Procedures Used in the Present Study

As pointed out by Jackson (1980), Cooper (1982), and Light and Pillemer (1984), the researcher undertaking a comprehensive review must have a well developed explicit plan for information retrieval, consolidation, and explanation to avoid threats to the validity of the project. Since the potential for subjectivity is more apparent in reviews than in experimental projects, the reviewer must take careful precautions when determining appropriate methodology. According to Jackson (1980), the reviewer has six basic tasks analogous to those performed by a primary researcher. The tasks include: (a) selecting questions or hypotheses for the review; (b) sampling the research studies; (c) presenting the characteristics of the studies and their findings; (d) analyzing the findings; (e) interpreting the results; and (f) reporting the review (p.441). The present study was approached with these tasks as guidelines.

It is acknowledged that only one investigator was involved in the actual review process. Since the gathering and reporting of numerical data was not the primary intent

or purpose of this project, reliability of coding was not verified. Instead, the summarization and interpretation of the eleven years of research from the writer's perspective was the emphasis of this review.

Selection of Framing Questions. The questions of concern to this writer are outlined in Chapter 1. However, the development of the questions warrant elaboration since they shape the direction of the study. Jackson (1980) suggested four sources for the researcher in the question development phase. Among the sources he included theories, previous reviews, primary research, and researcher ingenuity, intuition and insight. All four sources were utilized for this review.

After and during consideration of various psychological motivation theories and research and reviews concerning motivation in the sport environment, the writer became concerned with the utility of the available information. The concern for utility led to a search for consolidated information specifically related to motivation in the sport environment. As it became apparent that there were few resources available, the questions guiding the development of this study were generated.

Selection of Articles for Review. According to Jackson (1980),

... there is no way of ascertaining whether a set

of located studies is representative of the full set of existing studies on the topic. Consequently, the best protection against an unrepresentative set is to locate as many of the existing studies as possible (p.444).

Cooper (1982) suggested that there are at least five techniques for information retrieval, including: (a) the "invisible" college approach in which scientists working on similar problems informally exchange information; (b) the ancestry approach in which citations are tracked from one study to another; (c) the descendency approach in which the Science or Social Science Citation Indexes are utilized; (d) the use of abstracting services; and (e) the on-line computer search which scans abstracting services and citation indexes.

The present study includes references obtained through three of the five techniques, plus the inevitable "browsing" that occurs when reviewing periodicals. The writer initially chose to review only published material between 1975 and 1985 because of the concern with the availability of information to practitioners. The second primary reason for choosing published research reports involved the belief that utilizing refereed journals would enhance quality control. As Light and Pillemer (1984) stated, "... research projects published in refereed journals are usually better technically than unpublished works may be" (p. 35). Since the writer was not primarily concerned with the technical aspects of the reports, the selection of published studies

was logical. It is acknowledged, however, that utilizing only published research introduces the possibility of a publication bias. According to Light and Pillemer (1984) "... statistically significant findings are more likely to be submitted to a refereed journal, and more likely to be accepted, than nonsignificant findings" (p. 35). However, considering the original questions and purpose of this review, it was decided that the utilization of published research was most appropriate.

While the search for publications was initially limited to articles in the Journal of Sport Psychology, the International Journal of Sport Psychology, the Research Quarterly for Exercise and Sport, and the Journal of Sport Behavior, the desire for maximum coverage of the literature led to the use of the techniques previously described for locating materials published in additional refereed journals. Initially, 66 articles were chosen for review. Of the 66 articles, six were unavailable and eliminated from further consideration. Thus, 60 reports were included in the review. An analysis of the number of articles obtained from each periodical is provided in Table 1. As Table 1 illustrates, limiting the review to the initially preferred periodicals would have resulted in the loss of approximately one-quarter of the data base for the review. For example, nine studies were found in Perceptual and Motor Skills.

Table 1

The Frequency of Sport Motivation Research Articles in
Selected Professional Periodicals from 1975 to 1986

Journal	No. of Articles Reviewed
<u>Journal of Sport Psychology</u>	17
<u>International Journal of Sport Psychology</u>	20
<u>Perceptual and Motor Skills</u>	9
<u>Research Quarterly for Exercise and Sport</u>	6
<u>Journal of Sport Behavior</u>	1
<u>Psychology</u>	1
<u>Medicine and Science in Sports</u>	1
<u>Psychological Reports</u>	1
<u>Journal of Psychology</u>	1
<u>Journal of Clinical Psychology</u>	1
<u>Journal of Social Psychology</u>	1
<u>Journal of Applied Social Psychology</u>	1

Representation of the Characteristics of the Primary Studies. The initial step undertaken in characterizing each publication was the careful reading of the entire selection. Then, detailed notes were taken relative to the research questions posed regarding the research strategy employed, specific variables studied, statistical techniques employed, skill level, age and gender of subjects studied, and characteristics of the investigators.

Analysis of the Primary Studies. The results and conclusions of the primary researchers were initially examined to determine whether or not any trends were discernible. While the purposes of the analysis were consolidation and synthesis, the diversity found in the research limited the analysis to the identification of lines of research which show promise and/or need additional research to provide sufficient information to warrant consolidation and synthesis.

Interpretation of the Results. After identifying and analyzing the types of research being conducted, an attempt was made to answer the questions proposed in the initial Statement of the Problem outlined in Chapter I. The interpretation included an effort to reconcile the research results and conclusions with the writer's 14 years of teaching and coaching experience. The two areas of greatest concern were: (a) was there research to support motivation

techniques utilized in the field; and (b) did the research offer ideas or suggestions which could be applied in the field?

Presentation of the Report. The organization and presentation of the data were guided by the questions developed in the Statement of the Problem. The chapters were written to coincide with the questions posed.

Summary

This discussion would be incomplete without indicating the support offered by this review for the current interest and focus on applied sport psychology by academicians concerned with the dissemination of valid, methodologically sound research results. While Kaplan (1964) made the assertion that "... the cultivation of methodology is neither necessary nor sufficient for successful scientific endeavor" (p. 24), he does acknowledge that methodology contributes to scientific inquiry by helping "... us understand, in the broadest possible terms, not the products of scientific inquiry, but the process itself" (p. 23). Methodology includes the description, explanation and justification of the methods.

Because research reviewers are involved in a consolidation/synthesis process, Cooper (1982) suggests that they "... must pay attention to rigorous methodology" (p.

291). Accurate reporting of methodological procedures is one technique utilized to protect the validity of the review. While Cooper asserts that "... reviewers cannot expect perfectly valid conclusions" (p. 300), attention to detail and thorough reporting of how the review was conducted can enhance the validity of the entire study. When a research review is based on systematic procedures such as those outlined in this chapter, the pitfalls and shortcomings of the traditional review such as subjectivity, lack of formal guidelines, and inefficient extraction of information can be avoided (Light and Pillemer, 1984). This was the intent and commitment of the principal investigator in the present project.

CHAPTER III

THEORETICAL EXPLANATIONS

An in-depth review of published sport motivation research must logically begin with an examination of the fundamental psychological constructs and theories utilized by the researchers. Because motivational theorists have basically been influenced by either the philosophical, biological, or cultural traditions, they have tended to be concerned with different sets of phenomena or conditions under which phenomena occur. As a result, a variety of theories have developed (Cofer & Appley, 1964). Clearly, sport motivation researchers have utilized several theories to provide foundations for their research. It would be impossible to address them all.

Selected for inclusion in this study were the psychological theories which the author found to be among the most prominent in sport motivation research. While each of the 60 studies reviewed did not always specify a particular theoretical basis, there was often reference to a psychological theory or construct which influenced the investigation. It is acknowledged that the text which follows is not all-inclusive of psychological concepts and theories associated with published sport motivation research. The theories presented are indicative of only

some of the ideas from psychology that have influenced the systematic study of motivation in sport. The order in which they are presented is an alphabetical listing and is not intended to indicate importance or frequency of reference.

The basic tenets of each theory selected for inclusion in this paper are described, along with implications for application to sport behavior. In the later sections of this chapter, the writer presents examples of research reports which do not clearly identify a definitive psychological base. Reports concerned with sport-specific theory generation are also presented. The last section emphasizes the close relationship between psychology and sport psychology and the need for a cooperative sharing of ideas for the the benefit and growth of sport psychology as a subdiscipline.

Selected Psychological Theories

Csikszentmihalyi's Flow. Csikszentmihalyi (1975) became interested in the study of play because of the active, creative, self-motivated dimensions of behavior exhibited when a person is immersed in play activities. His primary interest centered around the question of whether or not it would be possible to isolate the factor which makes play liberating and rewarding, and apply, or develop, it in other activities. Since there seemed to be similar immersion in enjoyable experiences outside of the realm of

play, such as with artists at work, it was thought that the common factor could be isolated, better understood, and possibly applied to help make mundane, or boring activities more enjoyable.

Csikszentmihalyi was influenced in his work by three concepts from psychology. Laski's accounts of ecstatic experiences and Maslow's work describing self-actualization and peak experiences were helpful in developing flow theory, but they were incomplete. They did not provide concrete explanations and data to verify what it is that makes the peak experiences possible. The literature about intrinsic motivation also helped Csikszentmihalyi in his effort. While data from concrete studies were available, most of the studies were experimental in nature and, as is often the case, it was difficult to extrapolate from the experimental findings to everyday life situations. Additionally, the literature on play offered Csikszentmihalyi insights about peak experiences and intrinsic motivation. However, scholars who focused on intrinsic motivation limited themselves by assuming that play was different from real life. Therefore, studying play to assist in the understanding of real life was contradictory to them.

None of the above cited interests could provide answers to Csikszentmihalyi's questions. He, therefore, began a series of studies investigating ecstatic experiences, peak experiences and intrinsic motivation. He focused "... on

people who were having peak experiences, who were intrinsically motivated, and who were involved in play, as well as real-life activities" (p. xiii). The purpose of the studies was to try to determine whether or not there were similarities in the experiences, motivation and situations which resulted in the satisfaction and enjoyment reported by those involved. Csikszentmihalyi studied those activities which appeared to contain rewards within themselves, specifically, rock climbing, dance, chess and basketball. By assuming that work and leisure were not mutually exclusive states, he could study play to determine how work might be made more enjoyable. By utilizing questionnaires and the interview technique, data were gathered on male and female subjects. The outcome of the effort was the development of a new model of intrinsic rewards which proposes that the flow experience is the "... crucial component of enjoyment" (p. 11).

According to Csikszentmihalyi (1975), the flow experience occurs when a person is engaged in autotelic activities which are characterized by the opportunity for complete involvement by the actor. While games and play are among the most obvious of the flow activities, any activity, including doodling, playing chess, performing surgery, or rock climbing, can provide the opportunity for the flow experience. Flow activities consistently exhibit the following characteristics: (a) the participant is allowed

to match his/her skills with the demands of the environment; (b) the participant centers his/her attention on the task; (c) the participant receives clear feedback; (d) the participant senses control over his/her actions; and (e) the participant loses all sense of self-consciousness (Csikszentmihalyi, 1979). Whether or not the flow experience occurs depends upon the perception of the individual. When the participants perceive an even match between their capabilities and the opportunities for action, flow can occur.

There are three sets of interrelated events which are necessary for the flow experience. The participant must delimit reality by centering attention on a restricted stimulus field. Second, the participant must have a sense of control over the experience. Finally, the person must concentrate, exclude irrelevant stimuli, and respond to the feedback. When this occurs, a holistic sensation resulting from total involvement and loss of self-awareness can occur. This is a flow experience. Figure 2 presents a model of the flow state (Csikszentmihalyi, 1975). The model illustrates the necessary balance between skill and activity demands. If the activity is too easy or too difficult, either boredom or worry may occur, resulting in a mismatch of skills and challenges and an inability to experience flow.

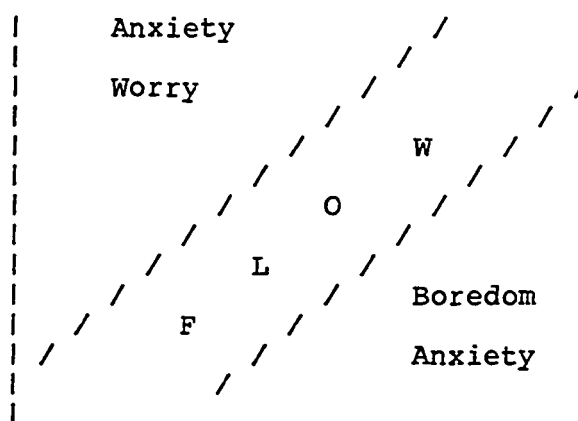
While the concept of flow is appealing in that many athletes can recall an experience which apparently fits the

description of flow, there are limitations in the application of flow in describing the motivation of athletes. The flow experience cannot be brought on or maintained by conscious effort. Consequently, if one considers that the primary motivational force for participation is to experience flow, then it must be acknowledged that there are relatively short periods of satisfaction. Flow, after all, is an elusive sensation that evades personal control. From a coach's standpoint, it may not be practical to think athletes can be "taught" to experience flow.

Figure 2

Model of the Flow State*

ACTION
OPPORTUNITIES
(CHALLENGES)



ACTION CAPABILITIES (SKILLS)

*Czikszenmihalyi, 1979, p. 49.

There are questions that Csikszentmihalyi's work raises. Does the concept of flow offer the practitioner anything more concrete and useful than the concept of peak experiences? Is flow an enduring motivational experience sufficient to explain an athlete's sustained participation over many seasons? These are but two of the questions that sport researchers intrigued with flow theory have yet to address.

Deci's Intrinsic Motivation. While Deci (1980) acknowledged that the environment affects people, he emphasized the importance of the individual's subjective experience of the environment more than the objective environment itself. Rejecting the behaviorist's basic tenet that mental events are not observable and are not useful or necessary for prediction and control, Deci asserted that internal, personal variables are necessary for understanding behavior. Because drive theorists gave no consideration to thoughts, feelings, or attitudes, they could not account for exploratory, manipulative behavior. White's (1959) rejection of drive theory led him to the development of the theory of competence motivation. Deci (1980) took the concept of intrinsic motivation as it evolved from White's work and elaborated on it to include competence and self-determination. He argues that self-determination, which refers to the person's ability to choose from among

behavioral options, is more fundamental to intrinsic motivation than competence. Deci proposed that "... the need for competence and self-determination leads people to seek out and conquer challenges that are optimal for their capacities" (p. 33). The process of being self-determining is in itself intrinsically motivating.

According to Deci and Porac (1978), intrinsic motivation is basic to the human organism. Intrinsic motivation is the innate part of our nature which results in the continual striving to be competent and self-determining. As such, it motivates our play, exploration, and creative thinking when the reward is in the activity itself. Instead of the end justifying the means, which may exemplify extrinsic motivation, intrinsic motivation acknowledges great significance and satisfaction to the means. Operationally, an activity is considered to be intrinsically motivated when there is no apparent external reward associated with it. In addition to emphasizing the basic nature of intrinsic motivation, Deci and Porac propose that, as an individual grows, intrinsic motivation may differentiate into specific channels, such as a need to achieve, a need for power, or a need for self actualization. Phenomenologically, intrinsic motivation can be related to the flow experience described by Csikszentmihalyi (1975). When an individual is in the flow state, all of the senses are tuned to the task, not to the ultimate results of the

action. It is not difficult to associate intrinsic motivation to the other psychological theories discussed in this chapter. Deci's presentation of the Cognitive Evaluation Theory (1975) offers an explanation of the mechanism through which an individual can shift from internal to external, or external to internal locus of control, depending upon the perception of a reward. Perceptions of rewards with a controlling aspect tend to result in attributions to an external locus of control and a greater reliance on external motivation. Informational rewards tend to result in internal attributions and relate to intrinsic motivation.

While several articles about sport motivation have alluded to intrinsic motivation and sport, one research report was found that attempted to test Cognitive Evaluation Theory in relation to a movement task. Utilizing the stabilometer as a novel movement task, Vallerand and Reid (1984) found that positive feedback increased intrinsic motivation and perceived competence, while negative feedback had the opposite effect. They concluded that their results supported the Cognitive Evaluation Theory. Vallerand (1983) previously utilized a questionnaire with male hockey players. He found that the treatment group exhibited higher levels of intrinsic motivation and perceived competence after positive feedback than the control group which received no reinforcement.

It is apparent that the concept of intrinsic motivation is central to the understanding of human motivation. Conceptually, intrinsic motivation can be linked with Maslow's Hierarchy of Needs (1975), White's Competence Motivation (1959), Weiner's Attribution Theory (1972), McClelland's Achievement Motivation (1975), and Csikszentmihalyi's Flow Experience (1975). Several sport motivation researchers have recently been concerned with intrinsic motivation, e.g., Orlick & Mosher, 1978; Sohi, 1976; Weiss, Bredemeier & Shewchuk, 1985. Nonetheless, further investigation is needed to determine and verify the nature of the relationship between the concept of intrinsic motivation and the other theories presented in this chapter. Such investigations offer the promise of increased understanding of the significance of intrinsic motivation in sport for all levels of participation.

McClelland's Achievement Motivation. In 1947, McClelland and his associates began a series of studies to (a) establish a procedure for measuring a human motive; (b) study behavioral correlates of a motive; and (c) study factors involved in a motive's differential development in people (Cofer & Appley, 1964). Basic to their approach was the assertion that humans have basic needs, i.e., food, and behaviors associated with satisfying those needs, i.e., eating. McClelland asserted that the drive model with its

tension reduction implications was inconsistent with motivation for the attainment of moderate stimulation and rewards.

The influence of the hedonistic principle is revealed in the belief of the McClelland group that the affective processes are important to motivation. Proposing affect as the basis for motivational associations permitted a distinction between motivated behavior and other behavior. Also, emphasizing the importance of direction as well as arousal accorded a greater role to external stimuli in the motivational process than does a drive model.

McClelland's studies were guided by three assertions: (a) measures of perception and learning were not adequate measures of motivation; (b) fantasy might be the best measure of a motive; (c) the manipulation of external conditions can arouse motives (McClelland, 1955). With full acknowledgment of the above stated tenets, McClelland and his associates developed the concept of achievement motivation using adult male subjects.

The Achievement Motivation Theory was specifically related to achievement-oriented activities characterized by three factors: (a) the individual is responsible for success or failure; (b) the individual anticipates unambiguous knowledge of results; and (c) there is a degree of uncertainty or risk associated with the activity (Atkinson & Feather, 1974, p. 5). Another critical feature

of McClelland's work was the recognition that in achievement-oriented activity, performance is evaluated in terms of an accepted standard of excellence. The three influential factors which are primary determiners of the strength of the achievement motive are: (a) a tendency to achieve success; (b) a tendency to avoid failure; and (c) extrinsic motivational factors (Atkinson & Feather, 1974). The interaction of these factors can result in a complex motivational state for the individual.

When attempting to understand an individual's motivational state, important concepts and their interplay must be acknowledged. For example, according to Atkinson and Feather (1974), the motive is the determinant of persistence which exerts a selective influence when the individual is confronted with alternatives. Moreover, the probability of success in a given situation varies according to the skills of the individual and the skills required for success. With respect to the incentive value, or expected reward of a specific outcome, there is variation according to the situation and the individual's perceptions. Finally, McClelland's work acknowledges the concept of inertial tendency that warrants consideration when a person is unable to attain a specific goal but continues to direct attention toward a particular class of governmental skills.

When one considers high need to achieve (nAch) individuals, more often than not they fit the descriptions

of many athletes. As Donnelly and Birrell (n.d.) point out, the sport environment may be good for nurturing nAch. However, it is important to remember that behavior in sport can be associated with a variety of motives. Since competitiveness involves a motive to achieve in the presence of evaluative others (Martens, 1975), everyone with high nAch may not necessarily be interested in sport as an avenue for achievement. We also need to remember that actual achievement may not be a safe index of the strength of an individual's nAch (McClelland, 1975). Other intervening factors such as skill, prior experience, and chance may prevent successful performance in sport.

Fuoss and Troppman (1981) suggested some implications for coaches who are knowledgeable about the achievement motive. They indicated that a coach could arrange successful experiences for the athlete by appropriate rewards. The intent would be to condition the athlete to succeed and strengthen the achievement motive. The same authors also suggested that athletes be exposed to successful models in an attempt to strengthen the desire to succeed. Related to modeling by other successful people, is the notion that athletes can modify their self-image by thinking of themselves as having a high nAch and by controlling their daydreams to allow only those thoughts that are positive and success oriented into the mainstream of their thinking.

While such suggested attempts at relating the Achievement Motivation Theory to sport are useful, Donnelly and Birrell (n.d.) pointed out several problems with nAch research in sport which need to be addressed by the sport motivation researcher.

1. Since behavior in sport is motivationally overdetermined, i.e., complex, we need to recognize and attempt to account for the confounding factors which influence the findings. For example, sport involvement may be a manifestation of the need for Power, as well as, or instead of nAch.
2. Because there are findings revealing a relationship between nAch and performance in non-competitive situations, but not in competitive situations, we need to consider the possibility that the concept of achievement motivation may be too broad to be useful in understanding achievement behavior in sport.
3. There is a need to develop valid specific achievement motivation measures for sports to enable a more accurate assessment of motivation patterns.

There are many avenues of investigation for the sport motivation researcher interested in achievement oriented behavior. Because it is situation specific, McClelland's Achievement Motivation Theory provides a foundation from which work may begin. The researcher may choose from several avenues of interest. The first step should be to

develop sport-related measurement strategies. Then, other considerations such as the effect of sport specific situations on motivation, and arousal compensation/accommodation in the competitive environment could be investigated.

Maslow's Hierarchy of Needs. Maslow's theory demonstrated a combination of the influence of the biological and cultural traditions on understanding human behavior. Beginning with the very basic psychological needs necessary for survival and moving up his hierarchy to self-actualization, Maslow described complicated needs which an individual strives to satisfy.

According to Maslow (1975), "... basic human needs are organized into a hierarchy of relative prepotency" (p. 361). The five levels of the hierarchy are: (a) physiological needs -- the most prepotent of all needs, necessary for survival of the individual species; (b) safety needs -- include physical and psychological factors such as stability, protection, freedom from fear, need for structure, order and law, and security; (c) belongingness and love needs -- the desire for self-respect, or self-esteem, as well as the esteem of others; and (e) need for self-actualization -- the human desire to achieve one's potential; the highest level, the one at which there are the greatest individual differences.

It is interesting that Maslow undertook his investigations of the self-actualized person informally in an attempt to understand two of his favorite teachers (Maslow, 1975). Through the observation of the teachers, he noticed a pattern that could be identified in the lives of other individuals he judged to be self-actualized. Maslow described self-actualization as an on-going process involving choices which, when made, demonstrated self-honesty, self-responsibility, and the ability to become selflessly involved in an activity with total concentration and absorption.

Obviously, self-actualization cannot be the primary motivating factor for a person who suffers from hunger. Maslow asserted that there must be some relative degree of satisfaction at each lower level of the hierarchy for a person to recognize consciously, or subconsciously, the next higher level. Also, Maslow did not postulate that all behavior is determined by basic needs nor did he support the view that a satisfied need is not a motivator (Maslow, 1975). Rather, he recognized that there are degrees of relative satisfaction. Thus he postulated that most coping behavior is multi-motivational. With respect to sport participation, a person could conceivably be motivated by needs from all five levels of the hierarchy, each need varying in relative strength according to the state of the individual.

Maslow (1975) and Fuoss and Troppman (1981) pointed out certain exceptions and limitations to the hierarchy. Among the most important, and one illustration for considering sport involvement, are:

1. What is motivating a person at a given moment cannot be determined (Fuoss & Troppman, 1981). Without specific knowledge of the motivating factors in operation, a coach would find it difficult to apply appropriate motivational techniques.
 2. The hierarchy does not give any indication of how to motivate a person (Fuoss & Troppman, 1981). There are no techniques offered to assist in the practical application of the theory in any environment, including that of sport.
 3. Because there are other determinants of behavior besides needs and desires, people do not always act on their needs and desires (Maslow, 1975). An athlete, who may be participating because of parental pressure, may not have any personal desires to be involved in athletics.
 4. The level of aspiration in some people may be permanently deadened or lowered (Maslow, 1975). A coach who aspires to have a championship team faces a difficult task if the athletes have become accustomed to losing and do not have aspirations similar to the coach.
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5. A need which has been satisfied for a prolonged period may be underevaluated in importance (Maslow, 1975). Although an athlete has received many accolades and positive reinforcements for past performances, the value and importance of positive reinforcement remains. The need for self-esteem may be a need requiring continuous attention and satisfaction.

We need to bear in mind that each succeeding level of the hierarchy becomes increasingly complex and difficult to measure in strength and importance. For example, hunger as a motivator is difficult to evaluate in a human because of its relative importance physiologically and the psychological factors which may interplay with the physiological needs. Therefore, behavior as complex as sustained participation in sport is all the more difficult to explain.

Yet, regardless of the limitations and concerns, there is considerable interest in the application of Maslow's hierarchy to the sport environment. The concept of the peak experience as a manifestation of self-actualization has been of particular interest to sport motivation researchers in their various descriptions of athletic experiences. Other levels of the hierarchy, such as those involving self-esteem and belonging, have apparent application in the sport environment. For example, belonging needs are easily associated with team sport involvement. In team and

individual sports, the individual's self-esteem is affected when the participant is satisfied with a particular performance. However, much research remains to be done to understand the relationship between the athlete's persistent striving behavior and Maslow's basic theory.

Weiner's Attribution Theory. Heider believed that "... people strive for prediction and understanding of daily events ... to give their lives predictability and stability" (Cox, 1985, p. 177). Such ideas led him to the development of the basic Attribution Model. Weiner expanded upon Heider's Model by restructuring the four main elements of the model. He also accommodated Rotter's concept of Locus of Control to illustrate perceived causality of behavior (Tritschler, 1980). The key element in Attribution Theory is the individual's perception of causation. According to Cox (1985), attributions are based on the socialization process and the values a person has incorporated into his/her personhood. The strength of Attribution Theory lies in its "... ability to explain perceived causes of behavior" (Tritschler, 1980). Outlined below is the basic structure of Weiner's Classification Schema for the Causal Attributes (Weiner, 1972).

Ability and effort are perceived by Weiner to be controlled by the individual; task difficulty and luck are not under the performer's control. Also, ability and task

difficulty are assumed to be relatively stable causations within a given situation, while effort and luck are not. Forming a causal attribution involves interpreting one's own behavior, as well as the behavior of other interacting parties and environmental influences. For example, task difficulty must be judged in terms of an individual's perceived ability, the nature of the task, and the ability of any co-actors. Consequently, task difficulty may remain relatively stable at a specific time, but be uncontrollable by the participant from one situation to the next. Russell modified Weiner's concept of controllability by grouping ability, task difficulty, and luck as controllable elements (Cox, 1985). However, since sport researchers are interested in the individual's perception of personal control, which may or may not be accurate, they have continued to utilize Weiner's Model when studying motivation.

Figure 3

Classification Schema for the Causal Attributes*

Stability Dimension	Locus of Control	
	Internal	External
Stable	Ability	Task Difficulty
Unstable	Effort	Luck

*Weiner, 1972

Attribution is important in the study of motivation because of its relation to emotion. Weiner (1972) proposed that emotions are the motivators of action and that attributions guide the emotions. He suggested the relationship between attributions and emotions to be as shown in Figure 4.

The proposed relationship between attributions and emotions suggested a basis from which one can attempt to predict behavior. For example, when performance is attributed to a relatively stable factor such as ability with resultant feelings of competence, the person generally expects similar expectations from future performances. In situations where performance is attributed to an unstable cause such as luck, future performance expectations may be

Figure 4

Relation Between Causal Attributions and Feelings*

Weiner's Elements	Emotional Responses	
	Success	Failure
Ability	Confidence Competence	Incompetence
Effort	Relaxation	Guilt
Others	Gratitude	Anger
Luck	Surprise	Surprise

*Weiner, 1972

more variable. If performance varies greatly from past performances, individuals tend to utilize unstable causations. Thus, past experiences, i.e., the socialization process, are strong determiners of attributions (Trischler, 1980).

Although Attribution Theory appears to be logical and offers suggestions for practical application, Rejeski and Brawley (1983) have pointed out several problems posed by its interpretations within sport psychology research.

1. There is a lack of precision in instrumentation for measurement.
2. Laboratory experiments may be unable to simulate real-world sport contexts.
3. The developmental level of the subjects may influence basic attribution principles.
4. The structure and nature of certain sports make certain attributions more salient than others.
5. Subjects may have attributions other than those listed in a given model.
6. The researcher and subjects may not be concerned with the same outcome in a given sport situation.

Acknowledgment of the above limitations does not, however, preclude the applicability of Attribution Theory in the study of sport. Researchers are faced with specific problems which need to be investigated. Further consideration needs to be given to utilizing Weiner's ideas,

especially as they interrelate with other theoretical positions.

White's Competence Motivation. White (1959) proposed that Hull's drive-reduction theory and Freud's psychoanalytic instinct theory were incomplete when they emphasized the importance of drives as operating forces in man and other animals. Reflecting the influence of the biological tradition in psychology, White defined competence as "... an organism's capacity to interact effectively with its environment" (White, 1959, p. 297). From this definition, and a rejection of the mechanics of need reduction as a basis for a theory of learning, White investigated the hypothesis that exploratory behavior in animals is an independent primary drive, separate from the basic drives of hunger, thirst, and sex. His central argument was based in the conviction that "... the motivation needed to attain competence cannot be wholly derived from sources of energy ... conceptualized as drives or instincts" (White, 1959, p. 297).

Exploratory behavior was described in relation to competence motivation which "... satisfies an intrinsic need to deal with the environment" (White, 1959, p. 318). White indicated that explorations include selected, directed, and persistent behavior. He further described dealing with the environment as engaging in a continuing transaction which

eventually alters one's relation to the environment. In other words, the person (or animal) directs focal attention on some part of the environment and organizes actions to affect the part that is selected. For example, exploratory behavior occurs in the play of children where we observe a theme of mastery, power, control, and/or self-assertion. Children concentrate on some aspect of the environment which responds to their activity.

Effectance was the term White used to describe the motivational aspect of competence. Effectance motivation involves satisfaction, that is, a feeling of efficacy, in behaviors which have exploratory, varying, experimental character, and result in changes in the environment. The organism explores the environment to determine how it can be changed and anticipates the consequences of change. It is comparatively easy to understand the high adaptive value effectance motivation has for human beings. White proposed that while effectance motivation may subside when a situation ceases to present new possibilities, it may also result in continuing exploratory interests and adventures when there is no longer a need to gain actual competence. Such behavior would result from the aim for a feeling of efficacy or satisfaction that occurs from the arousal state and from engaging in an activity. Thus, the link between effectance and the feelings of interest which sustain us in daily activities is explained. While White (1954)

recognized that adult motives are too complex to have one root, he suggested that through effectance motivation humans attain a high level of competence in dealing with the environment.

Effectance motivation can be related to the sport setting when we consider the hours spent in practicing a sport skill to attain mastery. The satisfaction felt when a skill is performed well is in itself motivation to maintain a level of performance and attempt to master other skills. However, it must be noted that while the concept of competence has a certain simplistic appeal, it is by no means simplistic in its nature and interpretation. White's conceptualization of competence was developed through thoughtful consideration of the available information on drives and instincts and the objections to these as a basis for all motivation. The suggestion that all behaviors which cannot be conceptualized as primary drives have a common biological significance, called competence, was derived by White through logic and thoughtful consolidation of observations and propositions.

Studying the concept of competence in sport presents problems because of the dynamics, e.g., continuous changing nature, of the environment. Moreover, the measurement of competence is difficult because we are dealing with highly personal feelings of efficacy as well as the more obvious mastery of a skill as determined by an objective criterion.

Interpreting sport behavior within a framework of effectance motivation is further compounded by White's suggestion that aroused drives such as pain and anxiety may override effectance motivation. As practitioners or observers of the sport environment, how can we determine when this occurs? Does the athlete recognize such arousal?

Obviously, the concept of competence has an almost "instinctive" appeal to anyone attempting to explain sport motivation. We tend to relate competence to success. But one must be wary of oversimplifying the term and be cognizant of the pitfalls of such superficial explanations. The concept of competence includes the exploratory, creative, manipulative behaviors inherent in play; but, the sport environment is not synonymous with the play environment. There is generally much more structure in sport resulting in imposed restraints on behaviors. Competence may be a primary motivating factor. However, researchers need to be aware that the concept has a very broad meaning which may not be appropriately redefined to situation specific orientations, especially those associated with continuous involvement in sport.

Reports With Multiple or Unidentified Theoretical Bases

Other theories borrowed from psychology provide the theoretical base for several research projects about sport motivation. Gould et al (1985) designed a study to

determine the participation motives for male and female swimmers aged 8 to 19 years. Rather than utilizing a psychological theory as a basis for the research, they chose to rely upon a model which suggests that an athlete's level of motivation depends upon the interaction of personal factors, the opponent, and strategies utilized by the coach. Howe (1986) asserted that Achievement Motivation, an unnamed theory explaining motivation through reinforcement, and the Incentive Motivation Theory had particular significance for application in the sport environment. In an overview of motivational factors associated with sport, Singer (1977) alluded to Drive Theory, the Inverted-U Hypothesis and Achievement Motivation.

The literature reviewed in the present study contains other reports which do not purport to be allied with a particular theoretical foundation. Several of these studies were associated with the attempt to isolate and define specific motives for participation. Gill, Grass, and Muddleston (1983) attempted to determine the participation motives of boys ages 9 to 18 and girls aged 8 to 18 attending summer sports school in Iowa. In a study involving 50 male athletes, 50 female athletes, and 100 non-athletes, Mathes and Battista (1985) utilized the Attitude Toward Physical Activity Questionnaire to investigate the importance of nine specific dimensions as motives for sport involvement. In a survey of 363 middle-aged non-elite

runners, Summers et al (1982) attempted to determine the motives for attempting a marathon. Wankel and Kreisel (1985) studied research methodology and youth sport motivation by utilizing open-ended and structured interview questions. Other studies are more difficult to describe. For example, Silverman (1985) was interested in achievement and participation relative to the initial skill level, previous experience, and sex of selected college students enrolled in swimming classes. Carpinter and Cratty (1983) investigated the "Back-To-The-Wall" effect in a series of competitions. None of the aforementioned reports identified a theoretical frame of reference.

It seems inaccurate to define studies which are not allied with a theoretical base as atheoretical. For instance, Siegal and Newhof (1984) did not report a specific theoretical framework which guided the conceptualization and conduct of their research. However, the report does reveal a psychological orientation which resulted in the postulation of the hypothesis that athletes in "professionalized" programs may value achievement more than athletes in more player-oriented programs. Possibly, the published report was confined to such a prescribed space that such background text as the theoretical basis of the report was deleted. Whether or not a researcher acknowledges association with a known theory is not the point of examining the foundational bases for sport

motivation research. Rather, it is to identify and synthesize, to the extent possible, the influence of psychological theory in the study of sustained involvement in sport.

Theory Generation

Among the articles reviewed, only two proposed theories concerning physical activity, motivation, and participation were found. Sonstroem (1978) set forth a Psychological Model for Physical Activity and Participation. Butt (1979) proposed a model outlining the Motivational Components of Sport. Each of these is explained below as suggestive of the potential for theory development in sport motivation and physical activity participation.

Sonstroem's Model for Physical Activity. Interest in the motivational influences affecting a person's attraction and adherence to a program of personal physical activity led Sonstroem (1978) to the formulation of an action model for physical activity. The model hypothesizes that participation in physical activity results when two conditions are met. The person must be interested in the activity (Attraction); and he/she must believe that some level of personal success is attainable (Estimation). The assumption of the complementary nature of Estimation and Attraction Scales developed by Sonstroem resulted in the

development of a paper and pencil attitudinal measurement of Estimation and Attraction. It must be understood that the Estimation measure purportedly reflects the individual's self-perception of physical ability. Theoretically,

... self-perceptions of physical ability and sport skills represent a sub-category of global self-esteem. As such, these self-perceptions are postulated to establish immediate relationships with indices of life adjustment and to contain the motivational properties of self esteem (Sonstroem, 1978, P. 98).

Consequently, scores on the Estimation scale purportedly indicate the motivational tendencies toward participation in physical activity.

The Attraction scale was developed to measure interest in a variety of sports and physical activities available to adolescents. Since the statements refer to spectator and participant situations, it does not necessarily assess a preference for participation in vigorous physical activity. Clearly, there is a distinction between the interest assessed by the Attraction scale and the self-perception of ability assessed by the Estimation scale. The complementary nature of the two variables of Estimation and Attraction is expressed in Sonstroem's model.

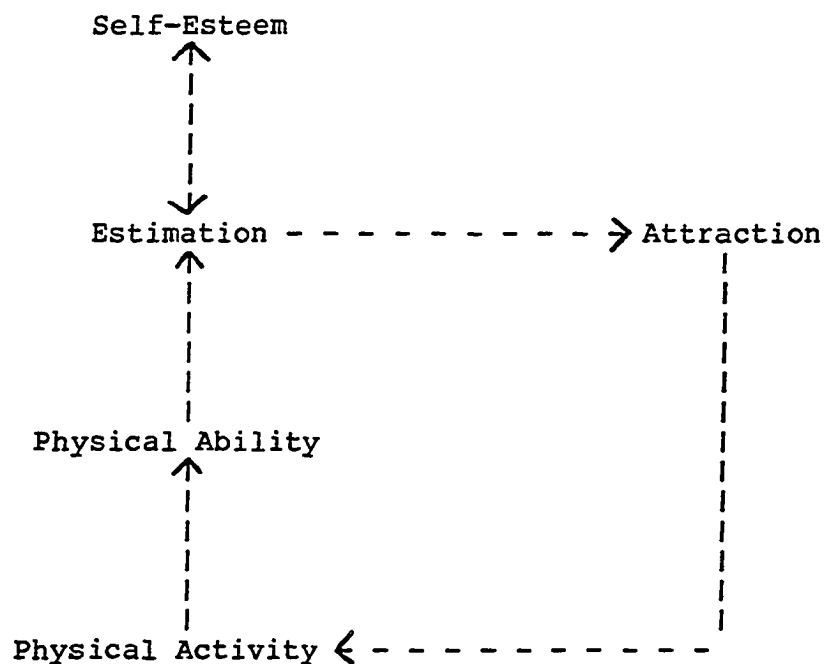
The model is offered tentatively by Sonstroem with the recognition that it is incomplete. As he reports, the fact that participation in physical activity can result in improved physical ability is documented and recognized. However, possession of a high degree of physical ability

does not necessarily result in increased physical activity. The model proposes that the Estimation and Attraction variables serve as mediating factors in the relationships between physical fitness, physical activity, and self-esteem. It is further proposed that Estimation influences the individual's Attraction to, and possible participation in, a given physical activity.

Presently, the Physical Estimation and Attraction Scales (PEAS) have had limited study. Sonstroem's own research has been conducted with samples of adolescent males. While Sonstroem suggests that changing the gender

Figure 5

Sonstroem's Psychological Model for Physical Activity*



*Sonstroem, R. J., 1978, p. 101.

utilized in the statements in the PEAS should make it suitable for use with females, there is no current verification of such applicability. In fact, Safrit, Wood and Dishman (1985) obtained results indicating differences in obtained responses which raises questions about the appropriateness of use of the PEAS with females. More research is needed to test the strength of the relationship proposed by Sonstroem and the usefulness of the PEAS with varying age groups and subjects of different sexes.

Butt's Model of the Motivational Components of Sport.

Butt's model (1979) proposed that sport motivation evolved "... on four levels: the biological, the psychological, the social, and the secondary reinforcement level" (p. 203). The two major influences are biological motivation and reinforcements which may be intrinsic or extrinsic in nature. Basically, it is proposed that biological motivation energizes behavior, while reinforcements shape the behavior. The psychological level is used to describe three styles of sport motivation and participation: aggressive, conflict ridden, and competence oriented. Social motivation offers the two important constructs of competition and cooperation. While competition motivation is exhibited in the desire to defeat others, cooperation motivation proposes that others are necessary partners in the sporting event. Butt hypothesized that the biological

energies may service all three psychological motivations. At level three, aggression and conflict tend to feed into competitive social motivation. Competence is usually associated with cooperative social motivation. External rewards are associated with competition while intrinsic rewards are associated with cooperation. Figure 6 represents Butt's schematic model.

The model provided the theoretical base from which Butt developed scales to measure aggression, conflict, competence, competition and cooperation as sport motivators. She suggested that the measures be utilized to study sport motivations in various groups and to provide a point of discussion among coaches and/or sport participants. Unfortunately, Butt's efforts appear to be neglected by other researchers. While the model suggests some logical connections between potential motivating forces, no additional published research was found to verify, clarify, or support any aspect of the model. Further research is needed to determine the full extent of the applicability of the scales and the usefulness of the proposed relationships in the understanding of sport motivation.

In sum, there have been few published reports indicating progress in theory development. While references have been made to works-in-progress in theory development (Fodero, 1980), unpublished works have limited availability. Many practitioners and researchers are ignorant of their

Figure 6

The Motivational Components of Sport*

Levels of Motivation	Source of Sports Motivation	
I. Biological Motivations	Life Force or Energy	
II. Psychological Motivations	1. Aggression	
	2. Conflict	
	3. Competence	
III. Social Motivations	Competition	Cooperation
IV. Reinforcements as Motivations	Shaping of Sports Motivation	
	The Rewards of Sport	
	Extrinsic	Intrinsic

*Butt, 1979, p. 204.

existence. Perhaps this is desirable until theories-in-the-making are satisfactorily validated.

Summary

The brief descriptions of selected popular psychological theories of motivation suggest an interrelatedness among sport researchers interests. Maslow's self-actualization, White's competence and McClelland's nAch appear to share certain commonalities. All three propose a need for the individual to rise above his/her ordinary, mundane existence. The theories propose a striving for superiority, either over self-imposed boundaries or over

someone or something in the environment. Attribution Theory is related to nAch in research findings which indicate that those with a high nAch tend to attribute success to internal causes (Cox, 1985). A similar association might exist between Attribution Theory and the person involved in a self-actualizing experience. Moreover, it might be conjectured that the person who is engaged in a self-actualizing experience is also experiencing effectance motivation. In addition, the participation may occur in an achievement oriented activity. To further complicate the theoretical pattern underlying sport motivation, flow may be an integral element in self-actualizing, competence related and achievement oriented activities. Further, the concept of intrinsic motivation may be interrelated with all of the above because of its broad fundamental applicability.

Obviously, the psychological theories and concepts lend themselves to descriptions of sport regardless of the fact that the interpretation is limited or qualified. The present review indicates that sport researchers have chosen different theories to provide a foundation for their work. The preponderance of varied theoretical bases of sport motivation research suggests that it could be useful to develop a theory of motivation specific to sport that would help guide future research. Such a theory could have its origins in an amalgamation of existing theories. In other words, the development of a theory of sport motivation is a

much needed and highly challenging undertaking.

CHAPTER IV

VARIABLES

As a concept, motivation encompasses a broad range of psychological and behavioral concerns. Researchers, therefore, have necessarily attempted to isolate measurable responses in their studies of sport motivation. Careful examination and understanding of the specific variables upon which sport motivation researchers have focused is essential to reviewing and summarizing the results of prior studies.

In general, the psychological variables which have interested sport motivation researchers are as varied as the theories which have formed the basis for much of the research. In fact, since some studies which do not indicate a psychological base within the context of the published report also examine psychological constructs (Kopelman & Pantaleno, 1977; Landers et al, 1982; Lanning & Hisanaga, 1983), it is easy to understand why the number of variables investigated far exceeds the number of theories "borrowed" from psychology by sport psychologists in their study of sport motivation.

This chapter considers the variables studied in published reports of sport motivation research reviewed for the present study. The text is organized into two major variable categories: (a) psychological constructs/

conditions and (b) performance variables. Following the systematic identification of the variables studied in the reports that were reviewed, there is a short discussion of the most salient observations.

Psychological Constructs/Conditions

There were 21 different psychological constructs/conditions serving as the focus of research in the 60 articles reviewed. For the purpose of clarification, the variables were classified as either the primary focus of the research or the shared focus. Both terms, "primary focus" and "shared focus", indicate specific reference to the psychological construct(s) designated in the published research report. The term "primary focus" was adopted to describe the reports in which the psychological construct was identified as central to the research question. For example, Scanlan and Passer (1980) investigated the attributional responses of 10 to 12 year old female soccer players after playing in winning, tying and losing situations. "Shared focus" is used in the present study when a research report identifies more than one psychological construct as germane to the research questions. The report by Tenenbaum and Furst (1985), involving an investigation of the relationship between achievement responsibility, attribution and situational variables for team and individual sport athletes exemplifies

a research question with a "shared focus". It should be noted that for a construct to be considered as the focus of a published research report, it had to be identified in the research problem. Table 2 indicates the frequency of research focuses.

The information in Table 2 reveals that there has been little consistency or continuity in the selection of psychological constructs for study by sport motivation researchers. While it is true that 63% of the focuses can be attributed to four psychological constructs and conditions, 37% of the focuses of the research reviewed was spread among 17 additional psychological constructs. Eight psychological constructs were found to be variables in only one study. Five of these eight were the primary focus of the study. This information serves to accentuate the diversification indicated in the discussion of the theoretical bases of the research reviewed. It also points to what may be a primary reason it is difficult to find conclusive evidence to support or refute the effectiveness of specific motivational techniques.

Examination of the "Total" column indicates that almost one-fourth of the 60 studies reviewed were concerned with attribution/locus of control. There was similar emphasis on achievement motivation, motives for participation/attitudes and intrinsic/extrinsic motivation. Without examining similarities between the studies with regard to other

variables such as subjects, skill level and activities studied, it is impossible to determine the significance of the fact that several studies were focused on a similar construct. However, it must be noted that the use of the same psychological construct does not automatically result in the use of the same operational definition. Consequently, the apparent similarity indicated by the psychological construct may not be as useful as desired.

Of greater concern is the fact that 17 different psychological constructs were investigated less than five times in the reviewed studies. Since eight of these 17 constructs/conditions were found in only one study, it obviously is impossible to make any conclusive statements with regard to the relationship between these constructs and sport motivation.

Such diversification of the focus of the research, coupled with the variety of theoretical orientation previously noted, has resulted in the lack of a core of knowledge from which researchers and practitioners can draw with confidence. As a result, many suggestions and practices concerning sport motivation appear to be based more on observations and/or general psychological research rather than conclusions developed from sound sport motivation research.

Table 2

Psychological Constructs and Related Effects Studied by Sport Motivation Researchers from 1975 to 1986

Psychological Constructs/ Conditions	Frequency			
	Primary Focus	Shared Focus	Total	%
Attribution/Locus of Control	11	4	15	19
Motives for Participation/ Attitudes (Enjoyment, Catharsis, Fitness)	12	2	13	16
Achievement Motivation	5	7	12	15
Intrinsic/Extrinsic Motivation	7	3	10	13
Personality Typing/ Profiles	4	0	4	5
Power	1	2	3	4
Fear of Failure	1	2	3	4
Level of Aspiration	1	2	3	4
Fear of Success	0	2	2	2
Competition	0	2	2	2
Goal Setting	0	2	2	2
Separation Hostility	1	0	1	1
Mental Activity/Dreams	1	0	1	1
Audience Effects	1	0	1	1
Back-to-the-Wall Effects	1	0	1	1

(CONTINUED)

Table 2 (CONTINUED)

Psychological Constructs/ Conditions	Frequency			
	Primary Focus	Shared Focus	Total	%
Sex Role Orientation	0	1	1	1
Aggression	0	1	1	1
Expectancy Effects	1	1	2	2
Group Cohesion	1	2	3	4
Cooperation	0	1	1	1
Anxiety	1	0	1	1
Total	49	31	82	100

N = 60 Studies

Performance Variables

Dependent Performance Variables. Dependent performance variables have actually received very little attention from sport motivation researchers. Much of their work has been descriptive, attempting to determine the nature and motivation of the performer. An example of this is the study by Balazs and Nickerson (1976) in which the personality profile of 24 female Olympic athletes was described. Other researchers have attempted to isolate and identify the reasons for participation (Gould et al, 1985; Mathes & Battista, 1985; Wankel & Kreisel, 1985). Actual

performance measures have been utilized in very few studies. In the 60 studies reviewed, only seven instances of dependent performance variables were observed. Vallerand (1986) studied intrinsic motivation in relation to a hockey related task. Fenk (1984) studied level of aspiration, goal setting and need for achievement among soldiers who were shooting and performing the shot put. The effect of simulated videotaping of bowling performances in a physical educational class was investigated by Elliott and Barter (1976). Man and Hondlik (1984) studied achievement motivation training with elementary school students. Manipulation of intrinsic and extrinsic rewards has received slightly more attention by researchers. Two tasks used by psychologists as performance measures were found in this review. The stabilometer was utilized by Orlick and Mosher (1978) and Vallerand and Reid (1984). The pursuit rotor was utilized by Weinberg and Ragan (1979). Table 3 indicates the performance variables which have been studied as dependent variables in the sport motivation research.

It should be noted that, as a general rule, the performance variables listed are easily measurable and can be observed in a relatively confined space. Consequently, they lend themselves to experimental and quasi-experimental research and may be the major reason for their role in sport motivation research. Even performance measures in a physical education class can be structured to allow

Table 3

Dependent Performance Variables in Published Sport
Motivation Research From 1975 to 1986

Task	Psychological Construct	Frequency
Bowling	Motivation	1
Hockey Related Task	Intrinsic Motivation	1
Physical Education Class	Achievement Motivation	1
Pursuit Rotor	Intrinsic Motivation	1
Squash	Audience Effect	1
Stabilometer	Extrinsic Rewards Intrinsic Motivation	2

N = 7 Studies

relative objectivity to allow comparisons between subjects.

Independent Performance Variables. The descriptive research that was reviewed revealed a wide variety of performance variables in sport motivation research including swimming (Butt, 1979; Gould et al, 1985; Silverman, 1985), running (Summers et al, 1982; Summers et al, 1983), playing volleyball (Aguglia & Sapienza, 1984; Lanning & Hisanaga, 1983), playing football (Lowe & Sani, 1972; Teevan & Yalof, 1980, 1981), and playing racquetball (Mark et al, 1984; Roberts and Duda, 1984). Table 4 lists all activities associated with studies of sport motivation among the

reports reviewed. Since some researchers worked with subjects from more than one sport, there are more activities included in the Table than the number of studies reviewed.

It seems reasonable to assume that many of the principal investigators worked with subjects who were most readily available considering the seasonal nature of specific sports and the desired data collection schedule of the researchers. Clearly, there is a broad range of activities associated with research in sport motivation. Coupled with the variety of psychological constructs focused upon in the studies, the picture of diversification of research effort is reinforced by the range of activities of the participants. Table 5 cross references the top four psychological constructs studied with the activities in which the subjects participated. Clearly, there is no activity in which participants have been studied in-depth with regard to any psychological construct. In a couple of the articles there were actually no activities indicated. Bostain and Gardner (1981) focused on the relationship between achievement motivation and athletic performance by suggesting specific practices and techniques based on empirical data. Singer and Gerson (1980) discussed attribution theory in relation to youth sports programs and made recommendations for the development of intrinsic motivation in the young participant.

Table 4

Independent Performance Variables Reported in Published
Sport Motivation Research From 1975 to 1986

Activity	Frequency
Baseball	4
Basketball	6
Boxing	1
Cheerleading	1
Curling	1
Cross Country	1
Fitness Programs	2
Flag Football	1
Football	4
Golf	1
Gymnastics	3
Hockey	2
Karate	1
Leisure Sports	1
Physical Education Class	3
Racquetball	2
Rowing	1
Running	3
Shot Put	1

(CONTINUED)

Table 4 (CONTINUED)

Activity	Frequency
Shooting	1
Soccer	4
Softball	2
Swimming	5
Table Tennis	2
Team Handball	1
Tennis	5
Track and Field	5
Volleyball	4
Wrestling	1
Unidentified Sports	11
Total	80

N = 60 Studies

Table 5 presents a cross tabulation of 29 activities plus one category of unidentified sports and the four predominant psychological constructs/conditions identified in this review. Obviously, there has been no concerted effort to thoroughly investigate the relationship between a specific sport activity and an isolated psychological construct/condition. An in-depth study of the relationship between participation in one sport activity and the effects of a specific psychological construct could be beneficial. Currently, generalizations are made by practitioners and researchers about the relationship between psychological constructs and conditions and sport participation. Given the data in Table 5, erroneous generalizations could be made. There is not enough information regarding specific activities to determine the appropriateness of such generalizations. Participants in many different activities, including team and individual sports as well as cheerleading and novel tasks (stabilometer, pursuit rotor) are represented in the research, but very little is known about any specific group. Since track and field athletes were used as subjects in three different studies of achievement motivation and physical education class participants were used as subjects in three studies of participation motivation, they are the most well represented groups of participants. Obviously, in-depth studies of different participant groups are needed.

Table 5

A Cross-Tabulation of the Activities and Four Predominant Psychological Constructs/Conditions Found in Published Sport Motivation Research from 1975 to 1986

Activity	Locus of Control/ Attribution	Motives	Achieve. Motivation	Intrinsic Extrinsic Motivation
Baseball		2		
Basketball	1	1	2	
Boxing	1		1	
Cheerleading		1		
Class	1	3	1	
Cross Country		1		
Football		2	1	
Golf	1			
Gymnastics	1	1	2	
Hockey		2		1
Karate			1	
Leisure Sports				1
Pursuit Rotor				1
Racquetball	2			
Rowing				1
Running	1	2	1	
Shot Put			1	
Shooting			1	

(CONTINUED)

Table 5 (CONTINUED)

Activity	Locus of Control/ Attribution	Motives	Achieve. Motivation	Intrinsic Extrinsic Motivation
Soccer	2	2	1	
Softball			1	
Stabilometer				2
Strength Training				1
Swimming	1	2	1	1
Table Tennis	2		1	
Team Landball	1		1	
Tennis	1	1	2	
Track and Field	1	1	3	
Volleyball	1	1	1	
Wrestling		1		
Unidentified Sports	1	2	1	1
Total	18	26	23	9

N = 60

Summary

A picture of diverse research focus within sport motivation has clearly emerged from the data presented in this chapter. While systematic inquiry into a large number of variables can assist in the development of a broad perspective of sport motivation, a solid foundation of knowledge needs to be built from which expansion of ideas and interests can occur. Because there is a lack of concentrated research focusing on specific constructs and related performance variables, there is little or no continuity in the efforts of those who have studied sport motivation for the past decade. Lack of continuity and consistency in the research effort makes it difficult for the practitioner to extract information with confidence for her/his leadership role in guiding the athlete's participation.

CHAPTER V

RESEARCH STRATEGIES

With respect to research strategies, the following text addresses (a) types of research, (b) instrumentation, and (c) statistical analyses utilized by the investigators of sport motivation. To have confidence in the findings, conclusions, and suggestions offered in any published report, one must understand the specific research processes involved and weigh their validity. The fact that there is considerable diversification in the psychological foundations and variables considered in sport motivation research does not preclude the possibility that valuable information is available to those who read the professional literature.

Types of Research

Examination of sport motivation research clearly reveals that dealing with human beings and the complex processes of motivation imposes stringent limitations on the researcher from a true experimental perspective. The necessary control and manipulation of variables required in experimental research is difficult to attain. One reason for such difficulty may be that scholars of sport are in the relatively early stages of development of a body of

knowledge about their specialized area of study. Researchers are still trying to identify and isolate concepts important to the understanding of sport motivation. As a result, the majority of investigations conducted to date can be classified as descriptive or correlational research. According to Issac and Michael (1981), the purpose of descriptive research is "... to describe systematically a situation or area of interest factually and accurately" (p. 42). Examples of descriptive research include questionnaire and interview studies, observation studies, documentaries, literature reviews and surveys. Issac and Michael also provide clear explanations of the other types of research found in sport motivation literature. Correlational studies "... investigate the extent to which variations in one factor correspond with variations in one or more other factors based on correlation coefficients" (p. 42). Ex Post Facto research examines an existing consequence and attempts to determine cause-and-effect relationships by examining data for possible causal factors. True experimental research investigates cause and effect relationships by utilizing random assignment of subjects to treatment and control groups and comparing their performance or status after a specific treatment is applied. Quasi-experimental research approximates the conditions of a true experiment. However, the setting, such as that found in a field experiment, does not allow the necessary control

and/or manipulation of all relevant variables.

Utilizing the Isaac and Michael classification scheme, the emphasis on descriptive research in sport motivation is clearly demonstrated. Table 6 outlines the types of research used in the 60 reports reviewed in the project.

From Table 6 we can see that while descriptive and correlational research are well represented, other types of research have also been conducted. Examples of descriptive research include articles such as Singer's (1977) overview of motivational factors in the sport environment and Wankel and Kreisel's (1985) review of open-ended and structured approaches to assessing motivation.

Experimental research is represented by attempts to control and manipulate the variables that might explain cause and effect. Vallerand (1983, 1984) examined the relationship between positive verbal feedback and intrinsic motivation. Elliott and Barter (1976) investigated the effect of videotaping on bowling performance. Forgas et al (1980) tried to determine the effect of an audience on the performance of squash players in a competitive situation.

Quasi-experimental investigations do not account for all relevant variables. For example, in the study by Sohi (1976) the effect of reinforcement on level of aspiration was investigated. While some controls were imposed, there was no control group for comparison purposes. Man and Hondlik (1984) presented information concerning an

Table 6

Types of Research Found in Published Sport Motivation
Research Reports Between 1975 and 1986

Type	Number	%
Correlation	11	18
Descriptive	31	52
Ex Post Facto	3	5
Instrument Development/ Validation	8	13
True Experimental	3	5
Quasi-Experimental	4	7
Total	60	99*

*Does not total 100 % due to rounding of decimal places.
N = 60 Studies

achievement motivation training program for elementary school students. Although a control sample was utilized, too many other variables could not be controlled for the research to be classified as a true experimental study.

Among the literature reviewed were reports that described the development of appropriate instrumentation for the measurement of constructs considered relevant to sport motivation. Willis (1982) developed sport specific motive scales. Schultz, Smoll, Carre, and Mosher (1985) developed an inventory to assess children's attitudes toward physical activity (CATPA). While this research is descriptive in

nature, it was classified separately to provide a clearer picture of the research conducted in sport motivation.

Instrumentation

There have been numerous attempts to develop methods to measure motivation. Some of the measurement methodology has been borrowed from psychology. Mehrabian's Scale of Achieving Tendency (Henschen et al, 1982) and Levenson's (1981) Internal, Powerful Others, and Chance Scales used by McCready and Long (1985) are examples. Other methods that measure performance level (Elliott & Bartee, 1976; Fenk, 1984) and time on task (Orlick & Mosher, 1976; Vallerand & Reid, 1984) have also been identified in the literature. Since one of the major problems confronted when attempting to consolidate sport motivation research is the lack of consistency in measurement, several attempts have been made to modify, validate, or develop instruments which could be utilized by the sport researcher in a variety of settings to allow opportunities to compare and contrast research results on a more equitable basis.

Butt (1979) developed short scales to measure aggression, conflict, competence and cooperation as sport motivators. She postulated a model of the Motivational Components of Sport which proposed that sport motivation evolves on four levels -- biological, psychological, social, and secondary reinforcement. Biological motivation is

proposed as the source of energy which is manifested in the struggle for survival and the will to win. Intrinsic or extrinsic rewards shape the sports behavior. Psychological motivations include aggression, conflict, and competence. Social motivators are, according to Butt, competition and cooperation. Self-report scales measuring each of the four motivations were developed using university students who participated in leisure activities, and competitive swimmers whose average was 12. Butt established construct validity. Although Butt proposed that the measures could be used to further the study of sport motivation, none of the articles reviewed in the present study adopted the recommendation and used the Scales.

The report of an effort to develop a psychometric measure of self-motivation was published in 1980 by Dishman, Ickes, and Morgan. These researchers developed and validated a Self-Motivation Inventory to determine the relationship between self-motivation and adherence to regular exercise. It was no surprise that they found a strong relationship between exercise adherence and self-motivation. Since the Inventory was developed utilizing 401 male and female undergraduates, and validated with 64 female athletes and 66 adult males in an exercise setting, it seems plausible to suggest that it might be used with a variety of populations.

Willis (1982) developed sport specific motive scales

for power, achievement, and fear of failure. The motives selected reflect the influence of achievement motivation as described by McClelland and Atkinson. Achievement motivation in its "classical" interpretation is manifested in the individual's inclination to approach success and avoid failure, and to compete with some standard of excellence, either internal or external. The power motive is concerned with the capacity to consciously, or unconsciously, affect the behavior or feelings of others. The scales were developed with the cooperation of 764 male and 253 female athletes ranging from junior high to college age. Additional testing resulted in evidence of content, criterion related, and construct validity. Unlike previous scales discussed above, Willis recommended that his scales be used only with groups for research purposes. He suggested that "... it would be premature to utilize them for prediction or diagnosis of individual motive levels" (p. 352).

Another instrument which is not yet recommended for widespread use is the Motivation Orientation in Sport scale developed by Weiss, Bredemeier, and Shewchuk (1985). Influenced by theories of competence motivation, Weiss, Bredemeier, and Shewchuk attempted to test the validity of Harter's (1981) self-report scale in the youth sports setting. Since the scale was originally developed to determine the motivational orientation of individuals in the

cognitive domain, it was necessary to re-word the statements to make them appropriate for the sport environment. The sample population consisted of 86 boys and 69 girls aged 8 to 12 and enrolled in a seven week sport program which emphasized educational goals of skill development, cooperation and a positive attitude towards physical activity. Weiss, Bredemeier and Shewchuk's results indicated that although the sport data resembles the core of Harter's ideas, the model would have to undergo numerous modifications before it could be representative of sport motivation data. The authors recommended additional research to validate the instrument. They also pointed out that their data supported the contention that motivational orientation is situation specific rather than a trait-like construct. Additional research utilizing Harter's model was not found in the present review.

The development of the Physical Estimation and Attraction Scales (PEAS) resulted in the generation of research in sport motivation. Sonstroem (1978) proposed a Psychological Model for Physical Activity and Participation. Along with the model, the PEAS was developed to assess estimation and attraction measures of an individual's perceived orientation toward physical activity. While the estimation aspect measures the individual's self-rating of her/his capabilities in sport and physical activity, the attraction aspect assesses an individual's fondness for an

interest in a variety of physical activities. Additional research utilizing the PEAS has been conducted and published by Dishman (1978), Dishman, Ickes, and Morgan (1980), Fox, Corbin, and Couldry (1985), and Safrit and Kampper (1980). Dishman, Ickes, and Morgan (1980) and Sonstroem and Kampper (1980) utilized the PEAS to predict exercise involvement and adherence. Dishman (1978) examined the relationship between fitness and attraction to physical activity. Of greatest interest to the reader interested in the validity and utility of instruments used in sport motivation research, are the studies by Fox, Corbin, and Couldry (1985) and Safrit, Wood, and Dishman (1985). Since the PEAS was originally developed using adolescent male subjects, questions have been raised regarding the validity of its use with other populations.

Fox, Corbin and Couldry (1985) utilized the PEAS with college age females. Results indicated that although Sonstroem's model worked similarly for males and females, there were some differences in the findings. Specifically, while the Estimation Scale emerged as a powerful instrument for assessing the relationship between physical estimation and self-esteem, fitness and physical activity level for both sexes, the Attraction Scale did not contribute to the model for females as it did with males.

Safrit, Wood and Dishman (1985) were also interested in the usefulness of Sonstroem's Model and the PEAS with other

populations. When studying the responses of college age males and females, it was found that, like Fox, Corbin and Couldry (1985), there appear to be some gender differences. Again the Estimation Scale was clearly appropriate for adult males and females. But, a difference emerged on the Attraction Scale. In Fox, Corbin and Couldry's study, the attraction factor was stronger for females than males. These two studies suggest that, while the Estimation Scale may be useful with adult males and females, separate instruments may be necessary for studying the attraction factor. However, without additional research, it is presently impossible to determine if the gender differences are "real" or the result of a flawed scale. Research needs to be conducted to determine the validity of the PEAS and its applicability to a variety of populations.

In sum, there is little consistency in sport motivation research with regard to the instrumentation and measurement. When attempts have been made to construct reliable instruments, there does not appear to be concerted effort to continue research along a particular line of interest and thereby obtain some conclusive findings. However, this may be partially explained by the lack of a common psychological foundation upon which sport motivation researchers have based their studies. With the lack of a common foundation, it is reasonable to expect a wide variety of instrumentation. There has been only occasional use of

performance variables as measures of motivation (Elliott & Bartee, 1976). The majority of measurement has been conducted with paper and pencil tests.

Statistical Analysis

The sport motivation research reviewed in the present study did reveal some consistency with respect to the statistical treatment of data. The statistical techniques utilized the most frequently in the published articles constituting the sample were: (a) analysis of variance, (b) correlation, (c) factor analysis, (d) multiple regression, and (e) t-tests. Twenty of the articles reported the use of analysis of variance in the treatment of the data. Other descriptive techniques such as percentages, graphs, means and standard deviations were presented to assist in the data analysis. Table 7 outlines the statistical treatments utilized in the 60 studies. Obviously, some reports indicated the use of more than one analysis.

The increased availability of computers has likely contributed to the use of complex statistical techniques such as ANOVA, MANOVA, ANCOVA, and regression analysis. It is common for researchers to utilize multiple statistical treatments to obtain all available information from the data (Fox et al, 1985; Kumar et al, 1985; Safrit et al, 1985).

Table 7

Statistical Treatments Used in Published Sport Motivation
Research From 1975 to 1986

Treatment	Frequency
ANOVA	20
MANOVA	4
ANCOVA	2
Regression Analysis	5
T-Tests	8
Mann Whitney U-Test	1
Factor Analysis	5
Correlational Statistics	32

N = 60 Studies

Thirty-two studies utilized one or more of the various types of correlation coefficients. Table 8 lists the correlation/association statistics found in the research. Chi Square ² (X) was used the most frequently followed by alpha coefficients.

Table 8

Correlation Statistics Found in Published Sport Motivation Research Between 1975 and 1986

Statistic	Frequency
Point Biserial Coefficients	1
Alpha Coefficients	4
Tetrachoric Coefficients	2
Canonical Coefficients	2
Chi Square	10
Spearman	1
Pearson-Product Moment	4
Kuder-Richardson	1
Split-half Reliability	1
Test Re-test	2
Unspecified Correlations	4
Total	32

N = 60 Studies

In addition to the statistical treatments, many researchers utilized descriptive techniques including graphs, percentages and means (Aguglia & Sapienza, 1984; Butt, 1979; Fox et al, 1985; Gould et al, 1985; Summers et al, 1983). The combination of graphic and analytic techniques provides a broader perspective of the results. Reported probability levels ranged from .10 to .006. The utilization of similar statistical techniques may be an asset when trying to compare results of the numerous studies. However, since so many diverse characteristics of the research have already been revealed, any attempt to consolidate and compare results based on similarities found in the statistical treatments of the data must be approached with caution.

Summary

The previous discussion about research strategies illustrates that there is "some" commonality among sport motivation studies with respect to research methods. While there is considerable diversification in the specific instrumentation utilized by researchers, one finds heavy reliance on the paper and pencil form of measurement of the psychological constructs under investigation.

The review also reveals some common techniques associated with statistical analyses. Since the problems formulated by the researchers dictate the type of research

and accompanying data analysis, it should not be surprising to find some common elements in the published research on sport motivation.

At best, it can be said that descriptive research studies, diverse instrumentation and popular statistical and analytic techniques reflect the current state of recently published sport motivation research. At worst, it is obvious that there is no common basis underlying investigations into sport motivation included in the present review.

CHAPTER VI

SUBJECTS

Any review of published research undertaken for the purpose of determining and/or synthesizing what they may collectively reveal must be concerned with the individuals who served as subjects of the investigation. The text that follows describes the subjects' gender and group affiliation, with the group affiliation regarded as an indication of age. The level of the sport involvement with respect to subject's gender is also indicated.

Affiliation

Of the 60 reports reviewed, seven were classified as either reviews of literature, discussions of the current status of sport motivation research, discussions of the application of theory in the sport environment, or a combination of the three. In reports such as the paper presented by Bostain and Gardner (1981), no attempt was made to relate the discussion to one group of athletes. Essentially, utilizing empirical data, the researchers attempted to relate and apply achievement motivation to the athletic environment without regard to level of participation or affiliation. A different approach was taken by Singer and Gerson (1980) when they offered specific

suggestions regarding youth sport participation and motivational factors. Darden (1972) provided an example of a review of literature concerning motivation techniques in a specific type of sport, i.e., strength development. Thus, subjects, per se, were not specified in each of the 60 studies.

Of the other 53 reports included in this review, 47 specified a particular group with which the subjects could be identified. While it is acknowledged that when there is some overlap with regard to age of different groups such as high school, college, Olympic and professional athletes, there is a recognizable difference in the intensity of most of the types of programs in which the subjects participated. Table 9 provides data indicating group affiliation and gender of the subjects identified in the published research.

Obviously, college students and athletes have served most often as subjects of recent sport motivation research. Twenty-two of the 53 studies involved these groups. It cannot be assumed that college students were selected in accord with a rational plan to isolate and understand the psychological constructs important to sport motivation for this group. It seems more probable that college age subjects were used because of convenience and availability. Since most researchers are associated with colleges and universities, they have ready access to such students. Also, the fact that college athletic programs are

Table 9

Frequency of Affiliation Groups in Published Sport
Motivation Research From 1975 to 1986

Affiliation Group	Female	Male	Female and Male	Unspecified	Total
Youth Class Participants	0	0	1	1	2
Youth/Teen Sports Participants	2	4	6	0	12
High School Athletes	2	0	0	0	2
High School Students	0	1	0	0	1
College Athletes	2	5	5	0	12
College Students	0	3	4	3	10
Adult Class Participants	1	0	0	0	1
Adult Leisure Activity Participants	1	2	4	0	7
Olympic Athletes	1	0	1	0	2
Professional Athletes	0	2	0	0	2
Mixed Affiliation	0	0	2	0	2
Totals	9	17	23	4	53

flourishing and receiving widespread support means that there are people involved in intercollegiate athletics on almost every college campus. Since coaches and players want to gain a better understanding of "anything and everything" that can affect or improve the athlete's performance, they are often willing to allow researchers to collect data from their players as long as it does not interfere with the normal training schedule.

In addition to college athletic participants, researchers often have access to college students in their own or colleagues' physical education classes. In such cases, the students may, or may not, initially be aware of the specific research question for which they are providing data. In any case, they can be classified as captive audiences available for study.

The second group of subjects used most frequently in sport motivation research includes youth and teen sport participants. The relatively recent growth of youth sport programs has generated interest in research with this particular group. That 14 studies were undertaken with this age group may suggest that they are readily accessible. It is also possible that there is more potential for reform within this age group than with other groups. Only 3 projects were reported with high school students and athletes. The one report using male high school students as subjects was by Sonstroem (1978) who developed the Physical

Estimation and Attraction Scales (PEAS). He actually carried out 3 separate studies and reported them in one paper which provided the rationale for the development of the PEAS. The other two studies involving high school athletes used female subjects only, leaving a void with regard to information concerning motivation and male high school athletes.

It is also surprising to find only two studies involving Olympic athletes. Lefebvre (1979) was interested in achievement motivation, attribution theory and Olympic athletes, male and female. Balazs and Nickerson (1976) reported on the personality profile of female Olympic athletes. Possibly, Olympians are not accessible subjects for motivation studies.

The lack of published research involving professional athletes is not surprising given their relative inaccessibility. The two reports which involved professional athletes were actually conducted without contacting the athletes personally. Kopelman and Pantaleno (1977) studied microfilm records of newspapers to obtain their data on baseball players. Vargo (1976) examined old records to obtain data for his investigation of the "Back-to-the-Wall" effect in baseball and tennis competition.

From the above discussion, it is clear that college students and athletes have most often been subjects in sport motivation research, followed by youth and teen sport and

youth class participants. Adult classes and leisure sport participants were the next group receiving the most attention. However, it should be pointed out that there is a lack of substantive information about any group, at any level of participation. If there were reason to think that motivation changes with age and, moreover, that primary motivational factors change with affiliation and level of participation, then, the data in Table 9 illustrates there has been no in-depth investigation at any level of participation. To gain insight and understanding of motivational influences among different affiliation levels and ages, there needs to be a concentrated effort from researchers to isolate the groups in question and investigate the same research questions with each group.

Gender

In the 60 studies reviewed, a total of 14,244 subjects were identified. Five thousand two hundred fifty-four (5,254) were females and 8,648 were males, and 342 were of unspecified gender. Carpinter and Cratty (1983) used the least number of subjects in one study when they interviewed 21 male water polo players. Carre et al (1985), in their study of approximately 1,500 males and 1,500 females in the development of the inventory for the assessment of children's attitudes toward physical activity (CATPA), used the largest sample of male and female subjects in a single

research project.

Information is provided in Table 9 about the number of investigations involving subjects of each gender. Twenty-three (23) of the 53 reports used both male and female subjects. An additional 17 studies used exclusively male subjects, while 8 investigations used female subjects only. There were three studies in which the gender of the subjects was not specified: (a) Silverman (1985) used students from a college swimming class; (b) Man and Hondlik (1984) studied achievement motivation in ten and eleven year olds in physical education classes; and (c) McAuley, Russell and Gross (1983) investigated attribution theory utilizing college physical education table tennis classes.

While Teevan and Yaloff (1979) were interested in the fear of failure among male college football players, they used a sample of college students from classes for comparison data. The types of samples and the era during which the investigations were conducted indicate the high probability of mixed gender classes. However, since this is not stated in the reports, these subjects have been included in the Unknown Gender category of Table 10.

Table 10 indicates the number and gender of the subjects in each affiliation group. The "Mixed" category accounted for representation by more than one age group. For instance, in Willis' (1982) report on the development of scales to measure power, achievement and fear of failure,

Table 10

Gender and Group Affiliation of Subjects in Published Sport Motivation Research From 1975 to 1986

Gender	Youth Programs	High School	College	Adult	Mixed Group	Olympic Athletes	Professional Athletes	Total
Female	646	158	1,755	189	2,467	39	0	5,254
Male	1,506	984	1,580	1,101	3,415	15	47	8,648
Unknown	63	0	279	0	0	0	0	342
Total	2,215	1,142	3,614	1,290	5,822	54	47	14,244

N = 53 Studies

the subjects ranged from junior high to college age. While there was no distinct group for identification of affiliation with a level of participation, the gender of the subjects in the sample was specified as including 764 males and 25 females. One explanation for the large "Mixed" group is the fact that Carre and his associates (1985) used approximately 1,500 males and 1,500 females in the development of the CAPTA. The other reports of mixed groupings were studies such as those by McCready and Long (1985) who studied aerobic fitness class volunteers ranging in age from 15 to 57 years old, and Gould, Felty, and Weiss (1985) who studied males and females aged 8 to 19 years.

All of the above cited studies represent attempts to investigate factors which influence motivation in a wide range of individuals. A basic question appropriate to studies involving groups with broad age ranges is "Do motivational factors change as a person ages?" If there are changes with age, studies of groups with wide age ranges may provide misleading or inaccurate information, unless the data are proportionately representative and analyzed by common measures. In instances where level of participation is a primary independent variable, such as in the Lefebvre (1979) study of Olympic athletes, the age range becomes a less important factor.

The second largest group studied included college age students and athletes. Interestingly, males and females are

almost equally represented. The larger number of females may be attributed to factors such as the interest and rapid growth of women's collegiate sports programs during the past decade.

Youth sports programs have also enjoyed increased popularity and interest in the last decade. As a result, it is expected that they would have been frequently studied by sport motivation researchers. The discrepancy between male and female representation may be partially attributed to opportunities for participation among such youth. While some activities, such as soccer, are often co-ed at this level, there are still relatively few females in the youth baseball and football programs. Studies by Vallerand (1986) and Sohi (1976) also account for some of the differences in the number of males and females studied. Vallerand studied intrinsic motivation utilizing 50 males aged 13 to 16 as subjects. Sohi investigated level of aspiration with a sample of 30 males aged 6 to 16 years old. In spite of the observation that the total male sample size is more than twice the size of the female total sample size, there were several studies which had nearly equal representation of the genders. For example, Weiss, Bredemeier and Shewchuk (1985) developed an intrinsic/extrinsic motivation scale utilizing 86 male and 69 female third through sixth graders.

The disparity among males and females studied is most obvious in investigations involving high school students and

adults. In both categories, the overall male samples are about six times larger than female samples. The discrepancy on the high school level is explained by the fact that all of the male subjects were used by Sonstroem (1978) in the development of the Physical Estimation and Attraction Scales (PEAS). No other studies reviewed used only high school males. There were only two studies in the review which used high school female subjects. Henschen, Edwards and Mathinos (1982) investigated achievement motivation and sex-role orientation among female track and field athletes. Lanning and Hisanaga (1983) were interested in competition anxiety among female high school volleyball players. It should be noted that the high school age group was not well represented among the published sport motivation research reports that were reviewed.

Investigations involving adults are more numerous than those representing high school students. However, there have been relatively few females included in the samples studied. Such a finding may partially reflect the situation similar to that in youth sports. There may or may not be as many opportunities for females as males to participate in sport activities on the adult level. However, it is possible that more males were studied because of their interest in sport. This calls attention to the idea that the studies conducted and reported in the present review include adults who grew up in a different time period with

attendant attitudes and social values not the same as they may be today. During the last ten to twenty years female participation in team and individual sports has increased on all levels. An indication of the possibility of differential time effects is the nearly equal representation of college males and females. In contrast, studies such as those by Summers, Machin and Sargent (1983) and Mark et al (1984) indicate about a three-to-one ratio of male to female participation among marathon runners and racquetball tournament players. There are obviously other reasons for larger male sample sizes, such as accessibility to the researcher and skill of the participants studied.

The Olympic affiliation group is relatively small and indicates a lack of information regarding motivation among Olympians. The same can be said about the professional level. Although two studies were concerned with professional athletes, only Kopelman and Pantaleno (1977) reported the actual number of male subjects in their study of the "traded player syndrome" among baseball players. Lack of female subjects on the professional level is not surprising considering the relatively limited opportunities for female participants. However, since participation by women in professional sports has increased, investigation of motivation in this group is warranted.

Summary

The selection of subjects utilized in the study of sport motivation illustrates the same diversity as was evident in considering the theoretical foundations supporting the research and the exact variables studied. Adults, college age students, high school students and children involved in youth sports and camp programs were all subjects of published research. It is interesting to note that both sexes were well represented as subjects. Possibly, some sport motivation researchers heeded the methodological concerns of psychological researchers and attempted to avoid the limitation imposed when only one half of the population is studied. However, there are still serious inadequacies in the representation of specific populations at different levels of affiliation. This is particularly evident among Olympic and professional athletes as well as adults and youth sport participants. Furthermore, while many investigators have used college students as subjects, the lack of consistency of variables studied and measuring devices which generated the data regrettably yields only inconclusive information for practitioners who work with athletes at a specific sport participation level.

CHAPTER VII

PRINCIPAL INVESTIGATORS

The data reported thus far in the present review provide evidence of the great diversification found in published sport motivation research. Since the notion that such diversity may be a reflection of the expertise and background of the principal investigators, an examination of available information about the researchers was undertaken. In most instances, periodicals provide little more than the author's name, and possibly an address. This section of the text is, therefore, restricted to reporting information regarding principal investigators' affiliations, gender and involvement in projects resulting in multiple authorship. Since prior authorship experiences impact upon the development of a research topic, additional data relating to authorship patterns and multiple publications by the same author is considered part of the status of current sport motivation research. For purposes of this report, the first author listed is considered the principal investigator. Although there may be exceptional cases in which there is no definitive primary investigator, such as in the Rejeski and Brawley (1983) report, it is assumed that such an article is the exception rather than the rule.

Affiliation

As indicated in the information provided in the periodicals reviewed, the principal investigators involved in sport motivation research are primarily associated with colleges and universities. Because six principal investigators were involved with the publication of two reports each, there was a total of 54 different principal investigators responsible for the 60 published reports. Of the 54 authors, 53 had an identifiable academic affiliation when their reports were submitted for publication. The only questionable affiliation is that of Sohi (1976), who was associated with the Netji Subhas Institute of Sports in India. Since an institute may be a promotional or teaching organization (Webster, 1961), Sohi's affiliation cannot be stated with certainty. The other 53 authors did specify direct affiliation with a college or university.

In addition to academic affiliation, it is also possible to identify the subject matter specialty for many of the primary investigators. Table 11 indicates the frequency which authors were reported to be affiliated with specific academic departments and programs.

As expected, physical education and psychology are the most well-represented areas, although physical education has more than a two to one ratio of representation. In at least one instance, dual specialization was observed. While

Vallerand (1984) was affiliated with the Psychology Department at the University of Guelph when the report was submitted for publication, the data were gathered during work in the doctoral program in physical education at the University of Montreal. Since sport motivation encompasses a broad range of concepts in psychology and sport, dual expertise and knowledge in both areas may be more frequently found than the data from the present report reveals.

It can be argued that Table 11 can be condensed to combine areas such as physical education, recreation and leisure studies, sport science and kinanthropology to develop a more accurate profile of the investigators. Table 12 provides a condensed frequency of distribution of the authors and their areas of academic interest.

A lack of explicit information for some authors led to the designation of an "Unspecified" category. Without counting the 12 investigators whose affiliation is not known, there is support for stating that there is some similarity in background for approximately 50% of the investigators. This is quite contrary to the diversity of some of the elements of sport motivation research as indicated in prior chapters of the present study.

Table 11

Frequency of Academic Affiliation and Gender of Published Sport Motivation Primary Investigators from 1975 to 1986

Academic Affiliation	Gender			Total
	Male	Female	Gender Unknown	
Physical Education	14	7	2	23
Psychology	6	2	1	9
Recreation/Leisure	2	0	0	2
Kinanthropology	0	0	1	1
Sports Medicine	0	0	1	1
College of Medicine	1	0	0	1
Child Behavior and Development	0	1	0	1
Sport Science	1	0	0	1
Education	1	0	0	1
Psychiatric Clinic	0	0	1	1
Unspecified	7	1	4	12
Totals	32	11	10	53

N = 59 Studies

Table 12

Condensed Version of Academic Affiliation and Gender of Published Sport Motivation Primary Investigators from 1975 to 1986

Academic Affiliation	Gender			Total
	Male	Female	Gender Unknown	
Physical Education and Related Areas	17	7	3	27
Psychology Psychiatry	6	3	2	11
Medicine	1	0	1	2
Education	1	0	0	1
Unspecified	7	1	4	12
Total	32	11	10	53

N = 59 Studies

Gender

Data regarding the gender of the authors is included in Tables 11 and 12. No data were collected to indicate the ratio of male to female physical educators and psychologists, yet, it is interesting to note in Table 12 that there is approximately a two to one ratio of male to female primary investigators in these areas. Overall, there is almost a three to one ratio of male to female principal investigators. A possible association between author gender

and subject gender and variables investigated led to further analysis.

Examination of the reports of 11 female principal investigators with respect to subjects is most revealing. In each of the 11 reports reviewed, female subjects were utilized. Seven of the reports included male and female subjects; four reports involved female subjects only. Table 13 outlines the subjects studied by each female primary investigator.

The fact that 11 principal female investigators utilized a total of 1,574 female subjects shed added light on the prior discussion of subjects. As Table 13 indicates, the female principal investigators concentrated their studies on females, or males and females. When using samples of both genders in their research there appears to be a trend toward similar sample size.

In addition to an apparent difference in subject utilization by male and female sport motivation investigators, there is a difference in variables studied. The earlier discussion of variables indicated that achievement motivation was of primary interest to many sport motivation researchers. Of the 11 reports published by female principal investigators, only one (McElroy & Willis, 1979) was concerned with achievement. On the other hand, five reports were concerned with attribution and perceived

Table 13

Subjects Utilized by Female Principal Investigators in
Published Sport Motivation Research from 1975 to 1986

Primary Investigator	Subject Gender		Male & Female
	Male Only	Female Only	
Butt (1979)			67 121
Gill (1983)			720 418
Horn (1984			100 2 (Coaches) 3
Mathes (1985)			100 100
McCready (1985)		61	
McElroy (1979)		262	
Pezer (1982)		159	
Roberts (1981)			73 70
Roberts (1984)			49 48
Scanlan (1980)		163	
Weiss (1985)			86 69
Total		645	1097 929

ability, consistent with the earlier discussion of variables. The remaining five reports were diverse as would be expected given the findings about theoretical bases and variables.

There is not enough data to permit conclusiveness concerning the gender of the primary investigators of sport motivation. However, there are three observations which should be noted: (a) There are almost three times as many male principal investigators as female principal investigators. (b) Female principal investigators tend to utilize either exclusively female subjects, or samples including representatives of both genders. (c) There appears to be some diversity of interest in motivation variables among male and female principal investigators.

Type of Authorship

As previously indicated, there were 54 different primary investigators of the 60 articles reviewed. The six investigators for whom there are multiple publications are listed in Table 14.

Table 14 reveals that while there is diversity in the topics of sport motivation research by different principal investigators, there does appear to be some consistency when the same researcher is the primary investigator of multiple publications. Roberts (1981, 1984), Sonstroem (1978, 1980), Summers (1982, 1983) and Teevan (1979, 1980) indicate an

interest in pursuing research about a specific topic beyond the initial one shot effort which appears to be so common.

Table 14 also discloses whether the principal investigator was assisted in the conduct and reporting of the research. Of the 12 published reports only three were published by the primary investigator as a single author. This reflects approximately the same percentage found in Table 15 when all 60 reports are examined for dual and multiple authorship. "Multiple" authorship is used to denote those reports indicating involvement by three or more investigators.

In approximately 27% of the studies the principal investigator assumed sole responsibility for the report. Forty-seven percent of the reports involved two investigators and approximately 27% involved multiple authorship. Of the reports completed by multiple authors, five reports indicated involvement by four or more investigators. Clearly, dual authorship is most common among sport motivation researchers.

When attempting to determine the relevance, if any, of single, dual and multiple authorship, it is necessary to consider some of the reasons for becoming involved in the publication process. Among some of the reasons may be (a) a desire to share information and stimulate interest in a topic, (b) a need among academics, the predominant orientation of sport motivation researchers, to develop a

Table 14

Principal Investigators with More Than One Publication and
Their Topics of Investigation in Published Sport Motivation
Research Between 1975 and 1986

Investigator	Single, Dual Multiple Author(s)	Topic of Investigation
Roberts (1981)	Multiple	Perceived Competence
Roberts (1984)	Dual	Perceived Ability
Sonstroem (1978)	Single	Physical Estimation & Attraction Scales
Sonstroem (1980)	Dual	Physical Estimation & Attraction Scales
Singer (1977)	Single	Motivational Factors in Sports
Singer (1980)	Dual	Attribution Theory/ Youth Sports
Summers (1982)	Multiple	Motives for Participation
Summers (1983)	Multiple	Motives for Participation
Teevan (1979)	Dual	Fear of Failure
Teevan (1980)	Dual	Achievement Motivation
Wankel (1985)	Dual	Methodological Concerns in Youth Sport Motivation Research
Wankel (1985)	Single	Motives for Participation

Table 15

Type of Authorship in Published Sport Motivation Research
Between 1975 and 1986

Type of Authorship	Frequency of Reports	%
Single	16	26.7
Dual	28	46.7
Multiple	16	26.7
Total	60	99.8*

*Does not total 100% due to rounding of decimal places.

list of publications for promotion and/or tenure consideration, (c) an interest in assisting a primary investigator develop a thought or idea through a meaningful, growth experience, or (d) the attainment of personal satisfaction in the process of completing and publishing the results of a research project. While these are by no means the only reasons for publishing, they are offered for consideration in the quest for understanding the involvement of 111 investigators in the publication of 60 research reports about sport motivation.

Summary

The principal investigators involved in sport motivation research reflect the same diversity found in the

other characteristics of sport motivation previously discussed. In instances where there appears to be some common denominator among researchers, such as affiliation with college/university physical education or psychology programs, the dissimilarity of the educational backgrounds and prior experiences seem to negate all but the most common bond the investigators share, an interest in motivation in the sport environment.

The discussion of the gender of the principal investigator revealed two interesting points. There were almost three times as many male primary investigators as there were female primary investigators. The female primary investigators tended to draw heavily from the female population for subjects, accounting for a large portion of the female subjects reported in the published sport motivation research.

Finally, while there were 54 principal investigators identified for the 60 reports reviewed, there were in actuality 111 investigators involved in the research and publication of the reports. The involvement of so many researchers may suggest why there is such diversification of interest and effort among the theories, variables, subjects and research strategies found in the present review of sport motivation research.

CHAPTER VIII

DISCUSSION

A systematic review of published research about a specific topic has the potential to reveal considerable substantive data about the topic studied and the processes involved in the study. This report is no exception. The reader is again reminded with respect to the observations and interpretations of this text that the knowledge, biases, research style and other academic traits of the principal investigator bear upon the outcome of the review.

The purpose of the following discussion is to present the investigator's observations, perceptions and attitudes that extend beyond the framing questions. Given that the investigator's interest in sport motivation from the standpoint of a coach and participant prompted the examination of published sport motivation research, there is an orientation toward practical concerns throughout the discussion.

Theoretical Foundations

Two attempts to develop a model or theory of sport motivation were found in the published research from 1975 to 1986 (Butt, 1979; Sonstroem, 1978 & 1980). However, there was little evidence of professional support and involvement

by colleagues for either of these attempts. This was a disappointment. Four studies (Dishman, 1978; Dishman et al, 1980; Fox et al, 1985; Safrit et al, 1980) were found involving the additional investigation of the Psychological Model for Physical Activity proposed by Sonstroem (1978). No supportive research was found relating to Butt's Model of the Motivational Components of Sport (1979). Clearly, seven published studies over an 11 year period indicates a need for additional research and dissemination of information that would, hopefully, contribute to the development of a theoretical base for sport motivation.

The above observation raises an important question. If the researchers were not using a sport specific theory of motivation as a foundation for their research, what was used? Since motivation is a construct which has generated considerable interest and research in psychology, it is not surprising to find psychological theories providing the theoretical bases for some of the sport motivation research. There were references to numerous specific psychological theories throughout the reports reviewed. In addition, there were sometimes references to a theoretical base without a discussion or elaboration of the nature or influence of the psychological theory on the problem studied. The psychological theories which appeared to have the most attraction to sport motivation researchers were Weiner's Attribution Theory, McClelland's Achievement

Motivation, White's Competence Motivation, Deci's Intrinsic Motivation, Maslow's Hierarchy of Needs and Csikszentmihalyi's Flow. One must keep in mind the point that psychological theories are not all mutually exclusive. There is an "intuitive appeal" in each that may be related to the complex nature of the activity being studied. After all, understanding participation in an activity which results in performance that is measured against a standard is the focal point of sport motivation research. It follows that the use of psychological theories related to control, competence and maximizing performance are easily associated with such academic efforts.

The need to determine that which causes a person to select, persist at and excel in a given sport is crucial to sport motivation research. Each of the theories selected by researchers reflects their specific interests and areas of concern. Since there is apparently no guiding force or body of knowledge currently providing direction for the research in sport motivation, there is great diversity of interest and use of psychological theories. While diversity may be expected at this stage of the development of sport psychology as an academic specialty, the practitioner is left with a sense of uncertainty about the "bottom line" of motivating athletes. If the researchers cannot reach a consensus on a theoretical foundation for sport motivation, the practitioners are left to draw upon their own knowledges

and instincts in determining the acceptability of conclusions drawn from the research. Since the practitioner's time for academic pursuits is limited, confusion and frustration may result when a practitioner reads several sport motivation research reports. A sport specific theory of motivation could provide the researchers and practitioners with the foundation upon which both could confidently rely.

Variables Studied

The examination of 60 published reports about sport motivation revealed so much diversification in the psychological constructs/conditions and performance variables studied that the practitioner is left with very little conclusive evidence on which to base his/her decisions. The present study revealed that there were 21 psychological constructs and conditions studied, as well as six dependent performance variables. Obviously, there was very little consistency or continuity in the study of any one variable.

Added to this diversity is the fact that there were 29 specific activities and 3 general categories of fitness programs, leisure sports and physical education classes identified in the research. Eleven reports did not specify the activity in which the subjects engaged. While such variation in activity participation may be beneficial for

the in-depth investigation of a specific psychological construct or variable, there is little evidence in the research of a concentrated effort to study one variable across a wide range of activities. On the contrary, the research appears to reflect the diverse interests and training of the researchers, and the availability of subjects for testing and study.

It should be noted that attribution/locus of control, general motives for participation, achievement motivation and intrinsic/extrinsic motivation were reported as variables or discussed in 50 of the 60 articles reviewed. However, because the studies are largely independent of one another, the reviewer was left with a sense of randomness about the research efforts, regardless of the good intentions of the investigators. The lack of focus and in-depth study of any psychological construct and/or performance variable leaves the practitioner with very little research-based guidance for application. The researcher, on the other hand, is left with tremendous opportunities and avenues for future research.

Research Strategies

The most common type of research identified in the 60 studies reviewed for this report was descriptive. Correlational studies and instrument development/validation reports were next in popularity. These three types of

research were found in 50 different reports. The nature of the sport environment and the emphasis on competition may be contributing factors in the overwhelming number of descriptive and correlational studies found. Also, the fact that sport psychology is a relatively new area of specialization may also account for this finding. Sport psychology researchers are in the early stages of trying to decide what to study and how to study the elusive, complex construct of sport motivation. It is difficult to establish and maintain the rigorous controls required for true experimental research when people in an active, changing environment are the central point of the research.

It is well established that the type of research conducted and the manner in which the data are collected have a direct bearing on the instrumentation used by the researcher. In the sport motivation research reports reviewed, there was an overwhelming use of paper and pencil assessment tools. There were several reports of attempts to develop appropriate instrumentation (Butt, 1979; Dishman et al, 1980; Sonstroem, 1978; Weiss et al, 1985; Willis, 1982). However, there was very little indication that these "appropriate instruments" were used by other researchers. Some investigators "borrowed" instrumentation from psychology, e.g., the Mehrabian Scale of Achieving Tendency (Henschen et al, 1982) and Levenson's (1981) Internal, Powerful Others, and Chance Scales (McCready & Long, 1985).

The most striking discovery relative to the instrumentation used by sport motivation researchers was the variation. A logical explanation for the use of so many different instruments is the diversification found in the theoretical foundations and psychological constructs previously reported.

One characteristic of sport motivation research in which some consistency was found concerned the statistical techniques employed. Correlational statistics were the most frequently employed, followed by analysis of variance and t-tests. The availability of computers has made it possible for many researchers to use more than one relatively complex statistical treatment in their efforts to obtain as much information as possible from the data.

There are no direct implications for the practitioner relative to research strategies used in the study of sport motivation. However, persons seeking to apply research findings must be assured that the studies which guide their practical decisions are valid, based on sound problem conceptualization and appropriate strategies, including valid instrumentation and analyses.

Subjects

The range and diversity of sample sizes was too broad to warrant any generalization of findings. However, it should be noted that there did appear to be an attempt by

many researchers to use samples which were large enough to justify the use of sophisticated statistical treatments.

While the size of the samples varied greatly, so did the age, gender and level of participation of the subjects. Since most of the articles reviewed did not specify the actual ages of the subjects, the writer acknowledged that in spite of some overlap of ages among different groups, group affiliation was the best available indicator of age and level of participation of the subjects. With full acknowledgment of the limitations imposed by such classification, it can be said that the majority of the subjects studied fell into a category identified as "Mixed Group." Forty-one percent of the subjects were classified by the writer as "Mixed" because the researchers included several age groups in their samples and often did not specify exactly how many subjects were in which age group or participation level. The category containing the second largest number of subjects was the college affiliation group in which there were 25 percent of the subjects. The subjects receiving the least attention of investigators were professional and Olympic athletes. In fact, there were no professional female athletes and only 54 Olympic athletes used as subjects in the 60 articles reviewed.

Overall, the balance of male and female subjects reflected the domination of males in sport. Approximately 61 percent of the subjects were male and approximately 37

percent were female. The remaining 2 percent were not identified by gender. One category in which there were more female subjects than male subjects was in the college affiliation group. In a second group, the high school affiliation group, more than 6 times as many male subjects were found. This may be explained by Sonstroem's (1978) use of male subjects in the development of the Physical Estimation and Attraction Scales.

The other groups which showed large inequities in the use of male and female subjects were youth sports programs, adult activities, Olympic participants, and professional sports programs. There were considerably larger male samples for all groups except the Olympic athletes. Since males have traditionally had larger numbers of participants at all levels of organized sport programs, the greater representation of males in the samples was not totally unexpected. The finding that there was not a great imbalance in overall gender representation, may indicate that some of the inequities in participation opportunities are being reduced, particularly on the college level where the total number of male and female subjects was almost equal. Increased athletic participation by females may be reflected in the increased interest by sport motivation researchers.

Obviously, the subjects used in the study of sport motivation reflect both the availability of athletes and the

interests of the researchers. The diversity found in the group affiliation and gender representation within certain groups reveals that there is insufficient evidence to warrant conclusive statements about sport motivation with regard to specific groups. The variations found in subject use, coupled with the diversity found in theoretical bases, variables studied, and research strategies compels anyone with an interest in the substantive knowledge undergirding sport motivation to seriously doubt the existence of a valid base of information from which researchers can draw, nor do practitioners have well-supported findings on which to base their daily decisions.

Principal Investigators

There were 54 principal investigators responsible for the 60 articles reviewed for this report. A total of 111 different researchers were actually involved in the authorship of the 60 reports. Eleven of the principal investigators were female and 11 could not be classified by gender with the available information. An interesting finding related to gender was that 30 percent of the female subjects were used in the studies by the 11 female primary investigators. As noted in Chapter VII, the female primary investigators used female samples or combinations of male and female samples. There was not a single instance of a female primary investigator using an exclusively male

sample. Again, it can be speculated that the interests of the researcher and availability of subjects dictated the sample used by male and female investigators. None of the investigators chose to undertake a longitudinal study or chose to concentrate a series of studies on a specific age group or a specific activity.

The relatively large number of investigators is consistent with the diversity found in the examination of the theoretical foundations, variables and subjects studied by sport motivation investigators. Until one or more researchers choose to conduct in-depth studies of specific aspects of sport motivation, there will likely continue to be fragmentation of research efforts and resultant meager, verifiable information. There needs to be a consolidation of research efforts by individuals and/or teams of researchers so that there can begin to be some definitive research questions formulated to guide the research in sport motivation. When and if such efforts take place, the practitioner will also benefit.

Practical Considerations

The diverse nature of the published sport motivation research reviewed for this project makes it difficult to confidently propose that research is currently offering the practitioner concrete information that may be useful in the field. However, there are certain trends that are worthy of

noting: (a) The research indicates that participants in athletics tend to have a high need to achieve. While the research does not offer suggestions for application of this finding, the practitioner might pursue certain practices, such as planning practices and scheduling games to challenge the athlete and enhance the positive aspects of a high need for achievement. (b) Participants in athletics tend to have a more internal locus of control and take responsibility for outcomes more than nonparticipants. Practitioners could "use" this tendency and encourage the taking of responsibility by athletes, or alter such an inclination when it is not realistic or productive. (c) Where extrinsic rewards are perceived by athletes as being controlling, they tend to lessen intrinsic motivation. If intrinsic motivation is important for continued involvement in sports, practitioners might consider reviewing and revising some of their current reward systems. (d) Enjoyment appears to be one of the primary motivating factors for participation. This finding is the simplest to incorporate into a field situation. If the practitioner is interested in promoting participation, then it is important to develop an environment in which having fun is a high priority. Obviously, varying intensity levels are enjoyable and acceptable to different participants.

The four implications of the research indicated above must be considered with reservation and qualification.

There is a need for continued research to provide definitive answers to questions regarding the differences in motivation at different age and/or participation levels. Research to date has not offered the practitioner substantial information on which to base decisions regarding motivation in the sport environment.

Recommendations

The information derived from this research project and the process of reviewing the published studies provide the incentive to the writer to offer several suggestions to both practitioners and researchers. It should be noted that the following suggestions are influenced by the 12 years of experience the writer has as an intercollegiate coach.

Practitioners. For the practitioner, there is presently little direct information derived from research beyond a few suggestions indicated by the trends identified in the present study. Four practical suggestions were outlined earlier in this chapter. In addition, the writer offers the following comments to coaches, teachers and sport leaders.

1. Stay abreast of the published research in sport motivation and critically weigh the findings and suggestions. Beware of cookbook motivational techniques. While there may be immediate positive results, there may also be detrimental effects such as
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those found with the use of some extrinsic rewards with individuals who perceive them as external controlling factors.

2. Be aware of the multifaceted nature of sport motivation. Because of the complexity of both sport motivation as a psychological phenomenon and the individual participant, flexibility in the use of motivational techniques is important. The same techniques cannot be expected to work all of the time with the same person or across several individuals.
 3. Encourage scholars/academics to study the participants in your care. Keep athletes informed of the need for research about sport. Although participation in research projects may seem to be inconvenient, the benefits to everyone involved in sport can far outweigh the temporary inconvenience.
 4. Become involved in research projects as an investigator. This happens to a limited extent every time a practitioner tries a new approach or strategy. Try formulating a specific research question and documenting the techniques used to investigate the question. Then, the results obtained, or performances observed, can be linked to specific technique. Share results by talking with colleagues and publicizing your ideas. In this manner, interest is stimulated and additional research by research-oriented professionals
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may be generated.

5. Remember that motivation emanates from within the individual. It is not something "done" to a person. The only way a practitioner can effectively motivate a participant for an extended period is to provide the incentives and/or environment conducive to continued involvement by the individual. Such motivation for involvement in sport is the result of the individual's perception of the advantages and disadvantages of participation.

Researchers. As indicated earlier in this report, sport psychology as an academic specialty is relatively new. Researchers have not yet clearly identified all facets of the field of study that warrant systematic investigation. One first step that could be taken to achieve a better understanding of sport motivation is the identification of theories and related factors within the sport environment that are important and/or influential. Moreover, how these theories influence behavior and performance in sport needs to be determined.

One approach to such a broad research goal is to refine our knowledge about the theoretical basis of sport motivation. Flow, Intrinsic Motivation, Attribution Theory, Achievement Motivation, Maslow's Hierarchy of Needs and Competence Motivation were found, in the present study, to

have influenced much of the work of sport motivation researchers within the past decade. Because of their interrelatedness, their intuitive appeal, specific associated findings to date, and the availability of assessment tools suited to the tenets of the theories, the writer recommends more in-depth studies of athletes based on Deci's Intrinsic Motivation, McClelland's Achievement Motivation and Weiner's Attribution Theories. The fundamental ideas inherent in these theories should be tested vis-a-vis athletes' striving behaviors in competitive sport.

An initial investigation might be conducted which would seek to identify and also classify broad categories of factors that motivate athletes. To accomplish such a purpose, a team of researchers should gather data from male and female participants across all levels of organized sport. Through paper and pencil tests, behavioral assessment tools, the history of prior activity and other background information obtained from personal communication with subjects of the study, a comprehensive picture of the athletic participant may be obtained. Precise analyses across and within genders and at the various levels of skill/competition need to be carried out to identify likenesses and differences. Comparison of data from sport specific and more generalized assessment tools as well as findings from athletes and published norms or other groups

of individuals, should be carried out to determine whether or not sport motivation is unique. Obtained data in such a study should also be reviewed with respect to available performance data. Clearly, such a massive effort would need to be carefully "orchestrated" and should involve experienced and highly committed scholars. Ideally, a research team should work together at conceptualizing the hypotheses to be tested. Data collection could be done by individuals. Although it would take time to establish a bank of data, the ultimate analysis could be undertaken by experts on the research team with the entire group again involved in the drawing of specific conclusions, further interpretations and implications.

In contrast to the above suggestion, another strategy for furthering our understanding of sport motivation is to focus on the individualistic, idiosyncratic nature of the athlete's striving behavior in sport. Rather than seek to generalize a theoretical base, case studies could be conducted to isolate those motivational elements which affect individual athletes. Once such elements are identified, the sport psychologist would need to relate them to sport specific phenomena. A strategy of this nature might be of particular help to practitioners who seek to manipulate the sport environment, to the degree they are able, in order to enhance the athlete's performance. Focusing on such highly individualistic psychological

considerations does not, however, diminish the importance of other factors -- in addition to motivation -- that affect performance, such as physical condition, competitiveness, goals, or chance/luck. Both practitioners and researchers need to bear in mind that even the most well-conceptualized and planned studies will not necessarily result in a "motivation prescription" for instant use by a coach.

One further suggestion for study is the idea that the sport environment itself may be an important motivating factor. It has been pointed out that several characteristics of sport, individually or collectively, may influence participation. Among those that allegedly contribute to the uniqueness are (a) the interaction of chance and skill, (b) the instant evaluation of performance in the form of immediate, definitive feedback, (c) the self-selection of sport -- both the type of sport and often the position -- by the participant, (d) the boundary of time and/or points associated with each individual contest, (e) the opportunity for a new beginning at the start of each contest/competition, (f) the acceptance and/or encouragement of aggressive behavior, (g) the possibility of an interaction between fantasy and reality within the participation experience, and (h) the supportive homosocial nature of the sport experience, particularly of team sports, which "set up" athletes for encouragement, camaraderie, and the opportunity for building self-esteem (Berlin, 1980).

The research question suggested is the investigation of possible relationships of these characteristics to athletes' motivations to engage/persist in sport. Whether or not there are any significant relationships among the characteristics would also be worthy of consideration.

Obviously, the study of sport motivation has just begun to occur in a serious manner. There is considerable information available in the psychological literature about human motivation that can be directed to athletes. It is not the writer's intent to be hyper-critical of what has been done thus far. Nonetheless, for sport psychology research to have meaning to practitioners, ambitious and innovative further inquiries must be undertaken.

CHAPTER IX

SUMMARY AND CONCLUSIONS

Summary

The present secondary research analysis was undertaken with four primary purposes: (a) to consolidate and synthesize the available information regarding sport motivation; (b) to identify strengths and weaknesses in the empirical support for practices in sport motivation; (c) to determine the "state of the art" of sport motivation research; and (d) to propose future directions for research and practices in sport motivation. The project began with the formulation of eight specific research questions that were developed to guide the gathering of data related to the broad purposes stated above.

Selection of articles for review was the next procedural step. It was decided to limit the inclusion process to published articles in refereed professional journals, i.e., periodicals with specified standards for publication. The time period researched was related to the writer's experience and background. Moreover, prior to 1975 sport psychology received relatively little attention as an independent area of study warranting the exclusive interest of professional physical educators. A total of 66 published

articles were located in 13 different periodicals. Since the Canadian Journal of Sport Psychology was not available to the writer, three articles were eliminated from the pool. Three other articles were eliminated when they could not be located. As a result, the data for this study was gathered from 60 published research reports.

Each article included in the review was critically read by the investigator and detailed notes were taken on specific characteristics: (a) methodology, (b) statistical analyses, (c) subjects studied, (d) findings, and (e) conclusions. Selected information about the researchers was also considered. Data were consolidated and interpreted. The results of the review and conclusions with regard to the specified framing questions are presented below.

Conclusions

Based on the observations made in the comprehensive review of the sport motivation research published between 1975 and 1986, the following conclusions are indicated.

1. What psychological theories have been used to provide a foundation for sport motivation research? The review of published research about sport motivation from 1975 to 1986 revealed references to numerous psychological theories. The most popular psychological theories were: (a) Weiner's Attribution Theory, (b) McClelland's Achievement Motivation, (c) Deci's Intrinsic
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Motivation, (d) White's Competence Motivation, (e) Maslow's Hierarchy of Needs, and (f) Csikszentmihalyi's Flow. While many researchers made reference to one or no psychological theories, a few authors alluded to more than one theory. Two researchers, Sonstroem (1978) and Butt (1979), attempted to generate sport motivation theories and models. Most of the research reviewed relied upon established psychological theories for interpreting findings. Nine of the 60 studies reviewed did not specify a specific theoretical orientation. The manner in which the theories were "used" cannot be generalized. For some researchers, instrumentation was adapted to the particular problem. Other researchers offered their interpretations in the light of accepted psychological theory. There was no clear pattern observed for setting forth the theoretical bases of sport motivation research.

2. What specific variables have been studied in the published sport motivation research? Two categories of variables were isolated in the present study, psychological constructs/conditions and performance variables. A total of 21 different psychological constructs and conditions were investigated. The most popular construct studied was attribution/locus of control. This construct was identified in 15 of the 60 studies reviewed. Motives for participation,
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achievement motivation and intrinsic motivation were the next most popular variables studied; they were identified in 44% of the reviewed reports. Other variables studied were: (a) Personality Typing/Profiles, (b) Power, (c) Fear of Failure, (d) Level of Aspiration, (e) Fear of Success, (f) Competition, (g) Goal Setting, (h) Separation Hostility, (i) Mental Activity/Dreams, (j) Audience Effects, (k) Back-to-the-Wall Effects, (l) Sex Role Orientation, (m) Aggression, (n) Expectancy Effects, (o) Group Cohesion, (p) Cooperation, and (q) Anxiety.

Only 7 reports indicated that dependent performance variables were part of the focus of the research. The performance variables studies were: (a) bowling, (b) a hockey related task, (c) physical education class performance, (d) pursuit rotor, (e) squash, and (f) stabilometer.

There are numerous independent performance variables in the published sport motivation research. A total of 29 specific activities, plus the 3 general categories of fitness programs, leisure sports and physical education classes, were observed in the articles reviewed. In addition, eleven articles did not specify in which activity the participants were engaged. Basketball participants were used in 6 studies; thus, basketball was the independent

performance variable found most frequently in the study of sport motivation.

3. What research strategies have been utilized in the study of sport motivation? Several approaches have been taken in the study of sport motivation. Three examples of true experimental research design were found among the 60 reports reviewed. Four examples of quasi-experimental design were found. The remaining 53 studies were classified as either ex post facto, descriptive, correlational or instrument development/validation. Descriptive research was the most frequent research strategy. Thirty-one of the studies reviewed revealed a descriptive research strategy. There were 11 correlational studies, 8 studies concerned with instrument development/validation and 3 ex post facto studies.
 4. How can the subjects participating in sport motivation research be characterized? The samples used by sport motivation researchers in the articles reviewed ranged in size from 21 university water polo athletes to approximately 3,000 male and female children used in one study that sought to develop an inventory for the assessment of children's attitudes toward physical activity. The range of sample sizes was too broad to warrant the estimate of an average.
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Group affiliation was the best available indicator of the age and level of participation of the subjects. In all 60 reports, 14,244 subjects were studied, 5,822 (41%) were classified as "Mixed" because the researchers included subjects from a broad age range. The category containing the second largest number of subjects was the college affiliation group in which there were 3,614 subjects (25% of the total). Sixteen percent of the subjects were involved in youth programs. An additional 9% of the subjects were adults and 8% were high school students. The remaining 1% of those who were subjects of sport motivation research was almost equally divided between professional athletes and Olympic athletes.

Approximately 61% of the subjects were male and 37% were female. The remaining 2% were not identified by gender by the authors of the articles. There were larger male samples for all groups except the Olympic athletes.

5. How can sport motivation researchers be characterized? Based on the available information, it was determined that 54 principal investigators were responsible for the 60 articles reviewed. Six of the principal investigators were involved in the publication of two articles each. Of the 54 principal investigators, 11 were female and 11 could not be classified by gender.
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One of the female principal investigators was involved in the publication of two reports. The remaining 37 articles were the responsibility of 32 male principal investigators.

Fifty-three of the principal investigators were affiliated with colleges or universities at the time the articles were submitted for publication. The affiliation of one principal investigator could not be determined. Of the 53 researchers, 27 were associated with physical education or a related area such as recreation or leisure studies. Eleven were members of a psychology or psychiatry group, two were in medical departments and one was identified with an education department. The affiliation of the remaining 12 principal investigators could not be identified.

Involvement of more than one researcher was a predominant characteristic of the articles reviewed. Forty-four of the 60 articles involved the participation of more than one investigator. Twenty-eight had dual authorship, and 16 had three or more authors. There were a total of 111 investigators involved in the publication of the 60 articles reviewed for this report.

6. To what extent is the research in sport motivation providing information which is applicable in the field? The research is not currently offering the practitioner

concrete information and suggestions which can be used in the field. However, there are certain trends identified in this review which may prove useful to teachers, coaches and others with practical concerns:

(a) Participants in athletics tend to have a high need to achieve. (b) Participants in athletics tend to have a more internal locus of control and take responsibility for outcomes more than nonparticipants. (c) When extrinsic rewards are perceived as controlling, they tend to lessen intrinsic motivation. (d) Enjoyment appears to be one of the primary motivating factors for participation. Each of the above has implications for direct guidance of individual athletes by their coaches.

7. To what extent does the published research offer directions for the future study of sport motivation? If anything, the published sport motivation research provides more questions than answers about sport motivation. Each article reviewed could become the focal point of a series of studies of sport motivation which could result in the generation of valuable and needed information. Until such in-depth investigation of highly specific central issues is accomplished, the research will continue to have little to offer the practitioner. Concerted effort by groups of committed researchers in conceptualizing crucial problems is

recommended.

8. Is there anything "unique" about the construct of sport motivation compared to explanations in "general" psychology that is revealed by the answers to the preceding questions? The review of the published sport motivation research did not reveal anything specifically unique about sport motivation other than to underscore the complexity of the environment in which participation occurs. The research reinforces the confoundedness of the concept of sport motivation and the attendant challenge to investigators who choose to study the involvement of people in various forms of physical activity.
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